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**ACADEMIC CALENDAR**

**Fall 1992**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>August 17-21</td>
<td>Orientation–Registration</td>
</tr>
<tr>
<td>August 24</td>
<td>First day of classes</td>
</tr>
<tr>
<td>September 7</td>
<td>Labor Day Holiday (campus closed)</td>
</tr>
<tr>
<td>November 26</td>
<td>Thanksgiving Holiday (campus closed)</td>
</tr>
<tr>
<td>November 27</td>
<td>(campus open, no classes)</td>
</tr>
<tr>
<td>December 19</td>
<td>End of semester</td>
</tr>
</tbody>
</table>

**Spring 1993**

<table>
<thead>
<tr>
<th>Date</th>
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</tr>
</thead>
<tbody>
<tr>
<td>January 11</td>
<td>Orientation–Registration</td>
</tr>
<tr>
<td>January 18</td>
<td>Martin Luther King Jr. Holiday (campus open, no classes)</td>
</tr>
<tr>
<td>January 19</td>
<td>First day of classes</td>
</tr>
<tr>
<td>March 22-26</td>
<td>Spring break (campus open, no classes)</td>
</tr>
<tr>
<td>May 8</td>
<td>End of semester</td>
</tr>
</tbody>
</table>

**Summer 1993**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>May 25-28</td>
<td>Orientation–Registration</td>
</tr>
<tr>
<td>May 31</td>
<td>Memorial Day Holiday (campus closed)</td>
</tr>
<tr>
<td>June 1</td>
<td>First day of classes</td>
</tr>
<tr>
<td>July 5</td>
<td>Independence Holiday (campus closed)</td>
</tr>
<tr>
<td>August 8</td>
<td>End of term</td>
</tr>
</tbody>
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Photos:  
*Bob Fader*  
Cover, Page 40  
*Jason Jones*  
Pages 6, 50, 55, 68, 129, 130, 160, 260, 263, 264, 274, 284

Design:  
Publications Department, University of Colorado at Denver

1 The University reserves the right to alter the Academic Calendar at any time.
2 Consult the *Schedule of Classes* for application deadline dates, deadlines for changing programs and registration dates and procedures.
University of Colorado at Denver
Speer at Larimer
P.O. Box 173364
Denver, Colorado 80217-3364

Although this catalog was prepared on the basis of the best information available at the
time, all information (including the academic calendar, admission and graduation
requirements, degree offerings and degree titles, course offerings and course descrip­
tions, and statements of tuition and fees) is subject to change without notice or obliga­
tion. The University claims no responsibility for errors that may have occurred during the
typesetting, printing or production of this catalog. The University of Colorado at Denver
is an affirmative action/equal opportunity institution. For current calendars, tuition rates,
requirements, deadlines, etc., students should refer to a copy of the Schedule of Classes
for the semester in which they intend to enroll.

The courses listed in this catalog are intended as a general indication of the University
of Colorado at Denver curriculum. Courses and programs are subject to modification at
any time. Not all courses are offered every semester, and the faculty teaching a particular
course or program may vary from time to time. The instructor may alter the content of a
course or program to meet particular class needs.

Courses are listed by college or school.
Message From the Chancellor

Dear Student:

Welcome to the University of Colorado at Denver. On behalf of the faculty, staff, and students, I offer to you the challenging environment of one of Colorado’s premier institutions of higher education. Your decision to attend CU-Denver shows your willingness to learn at Denver's only urban public university.

CU-Denver is one of the four campuses of the University of Colorado system. As a vital part of that system, offering baccalaureate, master’s, and doctoral programs, we have achieved distinction nationally and internationally because of the high quality of our programs, faculty, and alumni. Located in downtown Denver, the University challenges its students both academically and personally in an intellectual environment that encourages commitment, curiosity, and imagination.

A distinguishing characteristic of CU-Denver is our urban perspective that is an integral theme in our academic programming, the orientation of our faculty, and the identity of our student body. Our enrollment has grown to nearly 11,000 students.

The University offers some 40 degree and degree option programs at the baccalaureate level and over 60 degree and degree option programs at the post-baccalaureate level designed to provide you with a foundation on which to build your intellectual, aesthetic, and moral capacities as individuals and as citizens. Components of this educational experience include student involvement in independent study, research, and the creative process as a complement to classroom study. The University’s seven colleges and schools (Business, Public Affairs, Liberal Arts and Sciences, Engineering and Applied Science, School of the Arts, Education, and Architecture and Planning) and The Graduate School provide instruction and research programs that focus on the fundamental areas of knowledge, including interdisciplinary and professional study. We are committed to making available to you the opportunities for gaining knowledge, training, skills, and credentials which will enhance your economic and personal lives.

We at the CU-Denver campus take great pride in the diversity of our students and our ability to serve their varied needs. This is reflected in a commitment to an enriched baccalaureate education and the applied aspects of graduate and professional work. Our academic programs focus on applications relevant to regional as well as national issues and also seek to provide a humanistic understanding of social needs and problems.

We look forward to working with you as you join our community of scholars/teachers and dedicated staff. I promise a rich intellectual environment and a challenging educational experience. Most of all, I look forward to seeing you at graduation and awarding you the CU-Denver degree.

My best wishes to you and to your future.

John C. Buechner
Chancellor
University of Colorado at Denver
ADMINISTRATION

Board of Regents

KATHY ARNOLD, Littleton, term expires 1994
RICHARD J. BERNICK, Littleton, term expires 1992
ROBERT E. CALDWELL, Colorado Springs, term expires 1992
PETER C. DIETZE, Boulder, term expires 1996
HARVEY W. PHELPS, Pueblo, term expires 1994
NORWOOD L. ROBB, Littleton, term expires 1996
ROY H. SHORE, Greeley, term expires 1992
ROBERT SIEVERS, Boulder, term expires 1996
DAVID W. WINN, Colorado Springs, term expires 1994

University-Wide Officers

JUDITH ALBINO, President of the University; Professor of Psychology; Professor of Applied Dentistry. B.J., Ph.D., University of Texas, Austin.
GLEN R. STINE, Vice President for Budget and Finance. B.A., Michigan State; M.A., University of North Carolina, Chapel Hill; Ed.D., Harvard University.
THEO. VOLSKY, JR., Executive Vice President for Administration; Professor of Psychology. B.S., M.S., Kansas State University; Ph.D., University of Minnesota.
CHRIS ZAFIRATOS, Acting Vice President for Academic Affairs; Professor of Physics; Associate Vice Chancellor for Budget and Planning. B.S., Lewis and Clark College; Ph. D., University of Washington.
H.H. ARNOLD, Executive Secretary of the Board of Regents and of the University. B.A., LL.B., University of Colorado.
JAMES A. STROUP, Treasurer for the University and Assistant Vice President for Budget and Finance. B.S., Michigan Technological University; M.B.A., Michigan State University.

CU-Denver Officers

JOHN C. BUECHNER, Chancellor; Professor of Public Affairs. B.A., College of Wooster; M.P.A., Ph.D., University of Michigan.
BRUCE W. BERGLAND, Executive Vice Chancellor; Associate Professor of Education. B.S., Iowa State University; Ph.D., Stanford University.
JOHN A. BERNHARD, Vice Chancellor for Administration and Finance. B.A., Stanford University; M.B.A., Columbia University, Graduate School of Business.
GEORGIA LESH-LAURIE, Vice Chancellor for Academic Affairs; Professor of Biology. B.S., Marietta College (Ohio); M.S., University of Wisconsin, Madison; Ph.D., Case Western Reserve University.
MARK A. EMMERT, Associate Vice Chancellor for Academic Affairs; Associate Professor of Public Affairs. B.A., University of Washington; M.P.A., Ph.D., Syracuse University.
KENNETH HERMAN, Associate Vice Chancellor for Administration and Finance. B.S., University of Colorado.
SHEILA M. HOOD, Associate Vice Chancellor for Enrollment and Student Services. B.A., M.A., Colorado State University.
FERNIE BACA, Dean of The Graduate School; Assistant Vice Chancellor for Research and Creative Activities; Associate Professor of Education. B.A., University of Northern Colorado; M.A., Ph.D., University of Colorado.
JULIE CARNAHAN, Assistant Vice Chancellor for Planning and Information Resources Management. B.A., M.A., University of Colorado; Ph.D., University of Michigan.

The University of Colorado seal, adopted in 1908, depicts a male Greek classical figure seated against a pillar and holding a scroll. A burning torch framed in laurel is placed beside him. The Greek inscription means "Let your light shine." According to Denver designer Henry Reed, the classical design was used because Greek civilization "stands as the criterion of culture." The laurel symbolizes honor or success, the youth of the figure suggests the "morning of life," and the scroll represents written language.
General Information

The University of Colorado at Denver is one of the most important educational resources in the Denver metropolitan area. CU-Denver, one of four institutions in the University of Colorado system, is an urban, non-residential campus located in downtown Denver. Major civic, cultural, business, and governmental activities are in close proximity.

CU-Denver offers undergraduate degrees in more than 40 fields and graduate degrees in more than 60. Ph.D. degrees are offered in public affairs, applied mathematics, and educational administration. Doctoral studies also are available in engineering and other fields in cooperation with CU-Boulder. Special emphasis is placed on programs that will help assure students professional opportunities after graduation. All programs are tailored to meet the needs of the diverse student population. Classes are offered during weekday and evening hours, and on weekends.

Students' ages range between 17 and 75. The average student age is 29. Two-thirds hold full-time jobs and 60 percent attend part time. Sixty-two percent are enrolled at the upper division or graduate levels.

CU-Denver's faculty actively promote the special role of an urban institution in meeting the needs of students. Many faculty bring their work experiences to the classroom. They are alert to the challenges and advances of the urban environment and responsible to the needs of students and the community. The combination of CU-Denver's talented faculty and highly motivated students creates a vital and exciting educational environment. Students are offered the unique educational opportunity to combine real world experience with academic excellence.

History

Just over a century ago the University of Colorado was founded in Boulder, in 1876. In 1912, the University of Colorado's Department of Correspondence and Extension was established in Denver, to meet the needs of the burgeoning population. As the breadth of course offerings expanded, so did the demand for degree-granting status. The Denver Extension Center was renamed the University of Colorado-Denver Center in 1965, and by 1969, 23 fields of undergraduate study and 11 of graduate study were offered. In 1972 the Colorado General Assembly appropriated support to build the Auraria Campus, CU-Denver's current site. And in this same year the Denver "Center" was renamed CU-Denver. Two years later the University of Colorado was reorganized into four campuses—Denver, Colorado Springs, Health Sciences (Denver), and Boulder.

University of Colorado System

As one of four campuses of the University of Colorado, CU-Denver has a special role and mission in Colorado higher education. The University of Colorado at Boulder now serves about 24,000 students enrolled in undergraduate, graduate, and professional programs. The Health Sciences Center in Denver provides education and training to medical, dental, nursing and allied health personnel. The University of Colorado at Colorado Springs serves more than 5,900 students in the Pikes Peak region, offering undergraduate, graduate, and professional programs. CU-Denver's role within the University system is primarily to address the needs for undergraduate and graduate instruction in the Denver metropolitan area. Emphasis is given to professional, preprofessional, and liberal arts training in the context of a strong multidisciplinary and applied agenda for research and creative activities. CU-Denver students have access to the library resources of all campuses and cultural and athletic events sponsored within the University system.

Academic Programs

CU-Denver is, above all, devoted to the needs of the citizens of Denver and the region. With the rapid development of the nation's educational resources, it is not surprising that an increasing number of advanced students from across the nation and overseas elect to pursue their studies here. Today CU-Denver is composed of seven distinct academic units:

- School of Architecture and Planning
- College of Business and Administration and Graduate School of Business Administration
- School of Education
- College of Engineering and Applied Science

And it presents the University of Colorado system across campuses, the System-wide Graduate School, and general policy regarding academic standards, instructional initiatives, and faculty and staff personnel matters, and is supported by a system-wide Faculty Senate. CU-Denver, as well, has its own faculty governance structure. Students also have their own governance institutions.
College of Liberal Arts and Sciences
School of the Arts
Graduate School of Public Affairs

General Information

These units now accommodate over 10,000 students taught by about 360 regular, full-time faculty members. The diversity of the student body is a hallmark of CU-Denver and a source of deep pride. Among them are traditional students who have elected to pursue college degrees immediately after high school. There also are older students who, perhaps for financial reasons or the press of family commitments or because they've only lately recognized the value of a college education, have delayed entry. And there are professionals who seek to strengthen their base of skills or broaden their appreciation of the world around them.

The undergraduate colleges admit freshman and transfer students and offer programs leading to the baccalaureate degree in the arts, sciences, humanities, business, engineering, and music. A solid foundation of academic skills and general education is assured through a comprehensive core curriculum. The College of Liberal Arts and Sciences also provides pre-professional training in the fields of education, law, journalism, and the health sciences. The School of Education offers programs leading to teacher education. The Graduate School offers master's programs in the arts, sciences, humanities, engineering, education, and music to students with baccalaureate degrees. The School of Architecture and Planning, the Graduate School of Business Administration, and the Graduate School of Public Affairs provide programs leading to master's degrees in their specialized areas. CU-Denver doctoral programs are available in public affairs, education, and applied mathematics. Doctoral work in engineering also is available in cooperation with CU-Boulder. CU-Denver faculty also participate in other doctoral programs offered at CU-Boulder.

A complete listing of bachelor's and master's degree programs offered by CU-Denver is provided in the college and school sections of this catalog. The college and school sections describe specific policies on requirements for graduation, course requirements for various majors, course load policies, course descriptions, and similar information.

CU-Denver has kept pace with the demand for education which leads to improved professional opportunity in the Information Age. Many programs emphasize practical business world applications, and all CU-Denver students are given the opportunity to attain computer literacy. Specific computer-oriented academic programs are offered in the computer science (engineering), applied mathematics (liberal arts and sciences), and information systems (business) programs.

The Future

CU-Denver is committed to the highest standards of education, scholarship, and service to the community. From this commitment springs the vital energy that infuses every campus pursuit. The pace is fast, perhaps unprecedented. Undergraduate studies are at once becoming more and more varied, challenging, and rewarding. CU-Denver is reaching out to all who can benefit from the high quality education it has to offer. New highly innovative applied and professional graduate degrees are being developed that address the emerging needs of the region's economy. Centers for state-of-the-field research at CU-Denver are generating important practical solutions to some of Colorado's and the nation's most serious social, economic, environmental, and technological problems. New programs and opportunities in international education bring the world and its global economy into the classroom. Throughout history, urban civilization and the arts and humanities have evolved in a rich synergy. CU-Denver — an urban campus — is deeply involved in enriching the cultural milieu of the Denver area. Clearly, the University of Colorado at Denver is on the move.

Accreditation

North Central Association of Colleges and Secondary Schools
American Assembly of Collegiate Schools of Business
Accrediting Commission on Education for Health Services Administration
Colorado State Board of Education Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology
Landscape Architecture Accreditation Board
National Council for the Accreditation of Teacher Education
National Architectural Accrediting Board
National Association of Schools of Music
Planning Accreditation Board
National Association of Schools of Public Affairs and Administration

Auraria Higher Education Center

The Auraria Higher Education Center is the site for the University of Colorado at Denver, Metropolitan State College of Denver, and the Community College of Denver. The three institutions share library (which is administered by CU-Denver), classroom, and related facilities on the 171-acre Auraria campus. Certain courses and programs are cooperatively offered.

On the Auraria campus are administrative and classroom buildings, the Auraria Library, the student union, book center, child care and development centers, physical education facilities, science building, and service buildings.

The new buildings share the campus with the reminders of Denver's past— historic Ninth Street Park, restored church buildings, and the Tivoli brewery built in 1882. The Tivoli renovated into a complex containing specialty shops, restaurants, and entertainment, will become the student union for the fall semester, 1992.

Research and Other Creative Pursuits

CU-Denver is strongly committed to the pursuit of new knowledge through the research and creative efforts of its faculty. Research and creative activities not only advance knowledge and enhance the quality of life, but also strengthen teaching by grounding instruction in scholarship and professional practice. In addition, these activities constitute an important component of CU-Denver's service to the community at large. Therefore, externally funded projects are a major priority at CU-Denver.

Research projects, training, and public service programs at CU-Denver encompass both traditional and nontraditional fields of study with a focus on issues that relate to city, state, national, and international issues. During 1990-91, CU-Denver faculty and staff received external grants and contracts totalling $8,451,735 for research, training, and public service programs. The benefits for the campus in the years ahead will be substantial. Externally funded activities assist in sustaining scholarly discourse, enable faculty members to engage in the advancement of knowledge, provide the foundation for solving pressing practical problems of vital concern for society, and enhance the education of students. Many students actively participate in projects overseen by faculty members.
An important aspect of research and other creative activities at CU-Denver is its multidisciplinary and applied nature. Research in every school and college at CU-Denver addresses questions of great significance for the welfare of Denver and the larger region. Its role within a thriving metropolitan area also serves as a base for exploring topics of national and even international import. But not all research at CU-Denver yields solutions of immediate practical significance. Major efforts now explore topics on the cutting edge of the basic disciplines which are carried out within the rich dialogue of scholarship that knows no national bounds. These efforts may yield insights that eventually open the way to practical applications in the next century.

Current externally funded research efforts address a variety of contemporary economic, political, educational, engineering, mathematical, scientific, and environmental needs. Financial support has been obtained for program and service development in the areas of computational mathematics, bilingual and special education, health administration, international affairs, and executive seminars as well as institutes on aging and veterans’ employment and training.

Other projects include statewide investigations of economic development, poverty, literacy, air quality, water control, and transportation. Computer related projects include multilevel algorithms, fast parallel processing, algorithms in linear programming, and modeling. Projects in basic research range from investigations of earthquakes to neurotoxicology to growth equations for sporangiphores.

In addition, a great deal of research at the University goes on without substantial external support. This effort also yields important insights that are conveyed to a national audience through faculty publications, presentations, exhibits, performances, and professional activities. Many members of the faculty are leaders within the national scholarly community. All these pursuits bring recognition to the University, establish the credibility of its faculty, and enhance the value of the degrees it confers.

### CENTERS AND INSTITUTES FOR RESEARCH, SERVICE, AND TRAINING

#### First Amendment Congress
The mission of the First Amendment Congress is to unite Americans of every persuasion to support freedom of expression, and provide America with a continuing forum to discuss and debate the First Amendment as our cornerstone of liberty. To reach this goal, the Congress sponsors national forums, seminars, and congresses to forge new understanding of First Amendment issues; develops curriculum materials to increase students’ understanding of the First Amendment; delivers special messages to various audiences reminding them of their duties to uphold First Amendment freedoms; publishes materials, and supports public awareness campaigns on First Amendment issues.

#### Center for Health Ethics and Policy
The Center analyzes and develops constructive courses of action concerning policy and ethics aspects of health-related problems facing Colorado and the nation. The Center’s goal is to increase public and private sector attention to these issues and contribute to the making of informed and sound public policy decisions.

#### Center for Applied Psychology
This Center promotes research and educational programs in four areas: public mental health, psychology and the law, psychology and public health, and organizational effectiveness and decision making. The Center represents a cooperative relationship among higher education, government, business, mental health agencies, public health institutions, and the citizenry of the state of Colorado.

#### Center for Research in Applied Language
Established in 1991 with a grant from the President’s Fund for the Humanities, the Center for Research in Applied Language conducts research into language-based problems in real-life contexts. It orients its research projects humanistically and socio-culturally and underpins them with knowledge of the various branches of language theory. Faculty and students carry out projects that both contribute to our understanding of how and why language is implicated in social and individual problems, and propose solutions to or ameliorations of those problems. Reports of research projects conducted through the Center are published on an occasional basis and are obtainable from the English department office.

#### Colorado Principals’ Center
The Center is a staff development, renewal, and training center for practicing principals, assistant principals, central office supervisors, and others in instructional leadership positions.

#### Colorado Center for Community Development
The Colorado Center for Community Development provides technical, educational, and applied research assistance to organizations, neighborhoods, and communities that cannot afford or do not have access to professional services. The Center targets its assistance efforts to rural small towns, low income and/or minority communities, and non-traditional, community-based service or development organizations.

#### Center for Environmental Sciences
The Center fosters and promotes disciplinary and interdisciplinary research in the environmental sciences. Although the Center is in the College of Liberal Arts and Sciences, affiliated faculty represent several different schools and colleges and more than ten academic disciplines, including engineering and the natural and social sciences.

The Center houses the Analytical Laboratory, which specializes in research in environmental chemistry. Projects to date in conjunction with the Analytical Laboratory include studies of air pollution, the global sulfur cycle, and the chemistry of alpine lakes. The services of the laboratory are available to UCD faculty and graduate students, especially those in the M.S. in Environmental Sciences Program.

#### Center for the Study of Racism and Ethnic Violence
Activities of this Center include research and educational services related to prejudice and hate violence. The research scope of the Center ranges from local to international levels. Educational and training programs are provided for those interested in learning or teaching about the nature and reduction of prejudice, discrimination, and scapegoating. The Center’s CSREV Bulletin is published biannually.

#### Center for Urban Transportation Studies
This Center assumes a leading role in the Rocky Mountain region in developing research and interdisciplinary programs in urban transportation and providing a central resource for information concerning urban transportation problems in the Rocky Mountain region. The Center makes
available University expertise to outside organizations.

Land and Water Information Systems Group
The Group was created to advance the education and training, research, and public service missions of CU-Denver in the areas of urban and regional information systems, geographic-oriented databases, water resources systems, and built facilities management.

The Centers—Center for the Improvement of Public Management and Center for Public-Private Sector Cooperation
Goals are to improve public sector management and to engage the public, private, and non-profit sectors in devising solutions to community problems. The Centers offer management and leadership training for state and local public officials and private and nonprofit sector emerging leaders. They conduct research on public policy issues, analyzing policy alternatives and evaluating programs. The Centers provide strategic planning, conflict management, and facilitation services as well as other forms of technical assistance to state and local jurisdictions.

Computational Mathematics Group
The Computational Math Group at CU-Denver is a broad-based response to the rapid and dramatic changes in the various fields of computation. The group resides in the Department of Mathematics, but is intended to be a highly interdisciplinary organization with associates in other departments at CU-Denver, on other campuses of the Front Range, and within the business and research communities of greater Denver. The primary goal of the Group is to further its international recognition as a site at which computational mathematics thrives and is advanced. This is accomplished through the coordinated development of educational opportunities, active research, and direct access to advanced computers.

National Leadership Institute on Aging
The National Leadership Institute on Aging is devoted to promoting the leadership skills of men and women who design and deliver human services in our aging society. Created in 1988, the Institute provides opportunities for executives from the public, private, and non-profit sectors to address the complex policy and program issues prompted by America’s changing demographics. It challenges them to think innovatively, act with greater strategic skill, and forge new coalitions and partnerships to meet the needs of aging America.

The Institute’s activities include residential leadership development programs, mini-institutes and consulting activities.

Institute for International Business
The Institute for International Business was created in 1988 to serve as a center for the advanced study and teaching of international business. The Institute serves as an umbrella organization for international programs of the College of Business and as a bridge to business professionals and academic researchers from around the world who are interested in global business issues. Through courses, seminars, workshops and conferences, the Institute and the College of Business offer undergraduates, graduate students and business executives the opportunity to acquire the skills and expertise needed to be successful in our increasingly global economy. The Institute also conducts and promotes research on the global economic aspects of competitiveness.

National Veterans Training Institute
The Institute provides a series of training courses to further develop and enhance the professional skills of the Job Service’s national network of veterans employment and training representatives who deliver services to America’s veterans. The NVTI’s Resource Center provides materials and information to trainees and other service providers on topics supporting their professional efforts. The Institute is operated as a joint effort of the University of Colorado at Denver and the U.S. Department of Labor’s Veterans Employment and Training Service.

4th World Center for the Study of Indigenous Law and Politics
This Center provides a research clearinghouse to students and faculty at CU-Denver on local and political issues that affect indigenous peoples (the 4th World). In addition to supporting a modest library of rare books and periodicals on indigenous issues, the Center also stocks video and audio cassettes on subjects of indigenous politics, and a substantial newsfile archive on current developments in the 4th World. Currently, the Center is expanding the number of course offerings in the area of 4th World studies.

Region VIII Resource Access Project
Under a contract funded by the U.S. Department of Health and Human Services, the Resource Access Project provides training and technical assistance to HeadStart centers throughout a six-state region.

Center for Research in Rhetoric
The Center conducts original and applied research in rhetoric, broadly conceived, and engages in projects that involve faculty and students who carry out research studies that contribute to our understanding of rhetoric and discourse in the broad realm of human affairs. Reports presenting the results of research projects are published by the Center and are available in the English department office.

ADMISSION POLICIES AND PROCEDURES
All questions and correspondence regarding admission to CU-Denver and requests for application forms should be directed to:
Office of Admissions and Records
University of Colorado at Denver
Campus Box 167
P. O. Box 173364
Denver, CO 80217-3364
(303) 556-3287

General Policies
CU-Denver seeks to identify applicants who are likely to complete an academic program successfully. Admission decisions are based on many factors, the most important being:
1. Level of previous academic performance.
2. Evidence of academic ability and accomplishment as indicated by scores on national aptitude tests.
3. Evidence of maturity, motivation, and potential for academic success.

CU-Denver may deny admission to new applicants or readmission to former students whose credentials indicate an inability to assume those obligations of performance and behavior deemed essential by the University in order to carry out its lawful missions, processes, and functions as an educational institution.

Applicants who request degree programs that are not available at CU-Denver will be considered for admission to the College of Liberal Arts and Sciences with an undetermined major. Students admitted with an undetermined major are expected to declare a major by the time they have completed 60 hours toward graduation.
Admission of Undergraduate Degree Students

The University may change documents/credentials deadlines in accordance with enrollment demands. Applicants should apply as early as possible. Updated information is available from the Office of Admissions Processing (303) 556-2704. For an applicant to be considered for a specific term, ALL documents required for admission must be received in the Office of Admissions Processing by the DEADLINE for that term. Applicants who are unable to meet the deadline may elect to be considered for a later term. Transfer students are reminded that they should allow sufficient time to have transcripts sent from institutions they have previously attended. Foreign students are advised that it usually takes 60 days for credentials to reach the Office of Admissions Processing from international locations.

ADMISSION REQUIREMENTS FOR FRESHMEN

New freshmen may apply for admission to the Colleges of Business and Administration, Engineering and Applied Science, or Liberal Arts and Sciences. General Requirements: The applicant must be a high school graduate or have been awarded a High School Equivalency Certificate by completing the General Education Development (GED) Test.

Specific College Requirements:

COLLEGE OF BUSINESS AND ADMINISTRATION

English (one year of speech/debate and two years of composition are strongly recommended) ....... 4
Mathematics (including at least two years of algebra and one year of geometry) ............. 4
Natural sciences (includes two years of laboratory science) .... 3
Social sciences (including history) .... 2

See the College of Engineering and Applied Science section of this catalog for more specific information.

MINIMUM ACADEMIC PREPARATION STANDARDS (MAPS)

Freshmen entering the University of Colorado who have graduated from high school in 1988 or later are required to meet the following Minimum Academic Preparation Standards: 4 years of English (with emphasis on composition), 3 years of college preparatory mathematics (excluding business and consumer mathematics), 3 years of natural science, 3 years of social science including one year of U.S. or world history, 2 years of a single foreign language and 1 year of the arts.

The MAPS focus on subject areas the student has studied in preparation for college. Freshman admission standards define the level of success and achievement necessary to be admitted to the University of Colorado and include factors that predict academic success such as scores on the ACT or SAT, high school course work, and the grade-point average. Both the subjects the student has studied and how the student has achieved will be factors that determine admission to the University.

Students with MAPS deficiencies may be admitted to the University provided they meet the other admission standards (e.g., test scores, rank in high school class, grade-point average) and provided they make up any deficiencies in the MAPS prior to graduation from the University. Two levels of deficiency will be recognized.

1. One unit of deficiency will be allowed provided the student meets other admission standards and provided the student makes up the deficiency before graduation from the University. Courses taken to make up a deficiency will count toward graduation, provided the CU-Denver college accepts those course credits toward graduation.

2. In some cases a student having more than one unit of deficiency may be admitted, provided that the student meets other standards of the University. The student must make up additional deficiencies before graduation by taking an expanded program of studies. The student may satisfy the MAPS requirements by successful completion of 1) courses taken at CU, 2) courses taken at other institutions of higher education, 3) additional high school credits, 4) credit-by-examination programs, or 5) other requirements as approved by each CU-Denver college.

RECEIPT OF DOCUMENTS DEADLINES

<table>
<thead>
<tr>
<th>Undergraduate Students</th>
<th>Fall</th>
<th>Spring</th>
<th>Summer</th>
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<tbody>
<tr>
<td>New Students</td>
<td>July 22</td>
<td>Dec. 1</td>
<td>May 3</td>
</tr>
<tr>
<td>Transfer Students</td>
<td>July 22</td>
<td>Dec. 1</td>
<td>May 3</td>
</tr>
<tr>
<td>Former University of Colorado Students</td>
<td>July 22</td>
<td>Dec. 1</td>
<td>May 3</td>
</tr>
<tr>
<td>Intra-university Transfer Students</td>
<td>60 days prior to the beginning of the term</td>
<td></td>
<td></td>
</tr>
<tr>
<td>International Students</td>
<td>July 22</td>
<td>Dec. 1</td>
<td>May 3</td>
</tr>
<tr>
<td>Graduate</td>
<td>May 26</td>
<td>Oct. 27</td>
<td>March 10</td>
</tr>
</tbody>
</table>
Preferred consideration for admission is given to applicants who rank in the top 30% of their high school graduating class and present a composite score of 26 or higher on the American College Test (ACT), or a combined score of 1070 or higher on the Scholastic Aptitude Test (SAT). Business applicants will receive preferred consideration if they graduated in the top 25 percent of their high school class and achieved a composite score of at least 26 on the ACT or 1070 on the SAT. Engineering applicants will receive preferred consideration if they graduated in the top 20 percent of their high school class and achieved a composite score of at least 26 on the ACT and 28 on the mathematics or a 1100 total on the SAT with a 600 on the mathematics. Applicants who do not meet the admissions requirements for direct admission to Engineering are encouraged to apply as a pre-engineering major in the College of Liberal Arts and Sciences. Music major applicants also must successfully pass a music audition.

Applicants who do not satisfy the requirements for preferred consideration are reviewed on an individual basis.

**How to Apply**

1. Students should obtain an application for undergraduate admission from a Colorado high school counselor or from the CU-Denver Office of Admissions Processing.
2. The application must be completed in full and sent to the Office of Admissions Processing with a $30 (subject to change) non-refundable fee. For applicants who are granted admission but are unable to enroll for that term, the $30 application fee will remain valid for 12 months, provided the Office of Admissions Processing is informed of the intent to enroll for a later term.
3. Students are required to have their high school send an official transcript of their high school grades, including class rank, to the Office of Admissions Processing. Official transcripts are those sent by the issuing institution directly to the CU-Denver Office of Admissions Processing. *Hand-carried copies are not official.*
4. Students who did not graduate from high school are required to have a copy of their GED test scores and GED certificate sent from the certifying agency to the CU-Denver Office of Admissions Processing.
5. Students also are required to take either the American College Test (ACT) or the Scholastic Aptitude Test (SAT) and request that test scores be sent to CU-Denver (ACT code 0533 or SAT code 4-4875). High school students may obtain ACT and SAT test dates and locations from their counselors. Applicants who took one of these tests and did not designate CU-Denver as the recipient of the scores must request the testing agency to send scores to CU-Denver. A Request for Additional Score Report may be obtained from any of the offices listed below.

**Registration Department**

**American College Testing Program (ACT)**

P.O. Box 414

Iowa City, Iowa 52240

**College Entrance Examination Board (SAT)**

P.O. Box 592

Princeton, New Jersey 0854

**College Entrance Examination Board (SAT)**

P.O. Box 1025

Berkeley, California 94704

6. International students must submit proof of proficiency in the English language (see Requirements for International Students).

All credentials presented for admission become the property of the University of Colorado and must remain on file.

**Admission Requirements for Transfer Students**

Transfer students may apply for admission to the Colleges of Business and Administration, Engineering and Applied Science, and Liberal Arts and Sciences. Students interested in the field of education should contact the School of Education office for information (556-2717). Established under the auspices of the Colorado Commission on Higher Education and the Colorado Community College and Occupational Education System, transfer agreements have been made with Arapahoe Community College, Front Range Community College, Community College of Aurora, Community College of Denver, and Red Rocks Community College enabling students of these institutions to be directly admitted to CU-Denver. Students should contact the Office of Admissions Processing for complete details.

Minimum transfer admission standards have been developed for all public four-year institutions in Colorado. However, transfer applicants who meet these standards are not guaranteed admission. They also must meet the admissions standards of the University of Colorado and its individual colleges. To meet the minimum standards at the University of Colorado at Denver, students must meet one of the following conditions:

1. Have earned 12-29 collegiate semester credit hours and have the following grade-point average:
   a. 2.0 GPA if transferring from Colorado School of Mines, Colorado State University, University of Colorado at Boulder, or University of Colorado at Colorado Springs.
   b. 2.5 GPA if transferring from any other postsecondary institution.
2. Be enrolled in a CHE-approved guaranteed transfer agreement and meet the minimum academic qualifications of the agreement.
3. Have earned fewer than 30 collegiate semester hours and meet the freshman grade-point average:

   a. 3.0 overall GPA, but with a 3.25 in the last 24 semester hours of applicable course work attempted, will be automatically admitted.
   b. 2.5 overall GPA, but with a 3.25 in the last 24 semester hours of applicable course work attempted, will be automatically admitted.
   c. 2.6 in applicable course work in the last 24 semester hours will be considered as space is available. Students with less than a 2.6 GPA in the last 24 semester hours of applicable course work will be referred to the College of Liberal Arts and Sciences for admission consideration.

No applicant will be accepted who is not eligible to return to all institutions previously attended.

2. College of Engineering and Applied Science. Applicants to the College of Engineering should have at least a 2.75 cumulative grade-point average (on a 4.0 scale) for all work attempted, should have completed two semesters each of calculus and physics, and must be eligible to return to all institutions previously attended.

3. College of Liberal Arts and Sciences. Transfer applicants must have at least a 2.0 cumulative college grade-point average (on a 4.0 scale) for all work attempted and must be eligible to
return to all institutions previously attended. Course work in progress cannot be used in calculating the cumulative average. Music major applicants also must pass an audition. Contact the School of the Arts for audition information (556-2727).

Important Note: Applicants who do not meet the above grade-point average or credit hour requirements will be considered for admission, but on an individual basis.
The primary factors used when considering students individually are (1) probability of success in the academic program to which admission is desired; (2) the quality of prior academic work; (3) age, maturity, and noncollegiate achievements; and (4) time elapsed since last attendance at previous colleges.

TO APPLY
The student should obtain a transfer application from the CU-Denver Office of Admissions Processing. The application form must be completed and returned with the required $30 (subject to change) nonrefundable application fee. The student is required to have two official transcripts sent to the Office of Admissions Processing from each college or university attended. Official transcripts are those sent by the issuing institution directly to the CU-Denver Office of Admissions Processing. Hand-carried copies are not official. If a student is currently enrolled at another institution, an incomplete transcript listing all courses except those taken in the final term should be sent. Another transcript must be submitted after completion of the final term. (Transcripts from foreign institutions must be presented in the original language and accompanied by a certified literal English translation.)

Students who have attended a two-year school or community college and were enrolled in the Guaranteed Transfer Program to transfer to CU-Denver, should submit a copy of the guaranteed transfer "contract" with their application.

Liberal arts and music major applicants with fewer than 12 semester hours (18 quarter hours) of college work completed must submit a high school transcript with ACT or SAT test scores.

Engineering applicants with fewer than 24 semester hours also must submit high school transcripts and ACT/SAT scores.

Business applicants with fewer than 24 semester hours also must submit high school transcripts and ACT/SAT scores.

Applicants to the College of Liberal Arts and Sciences should be aware that the College requires elementary proficiency in a foreign language for graduation. Applicants to the College have fulfilled this requirement if they have completed three years of any classical or modern foreign language in high school and present a high school transcript to the College Advising Office for verification. For further information, students should contact the College Advising Office, 556-2555.

All credentials presented for admission become the property of the University of Colorado and must remain on file. Students who do not declare all previously attended institutions are subject to disciplinary action and/or dismissal.

TRANSFER OF COLLEGE-LEVEL CREDIT
After all official transcripts have been received and the applicant has been admitted as a degree student, the Office of Admissions Processing and the appropriate academic unit will determine which courses taken at other institutions are applicable to a degree program at CU-Denver. In general transfer credit will be accepted insofar as it meets the degree and grade requirements at CU-Denver.

College-level credit may be transferred to the University if it was earned at a college or university of recognized standing, by CLEP or advanced placement examinations, or in military service or schooling as recommended by the Commission on Accreditation of Service Experiences of the American Council on Education; if a grade of C- or higher was attained; and if the credit is for courses appropriate to the degree sought at this institution. Courses taken pass/fail are transferred when a grade of C- or higher is required to pass.

The University may accept a maximum of 72 semester credits (108 quarter hours) of work from a two-year institution toward the baccalaureate degree requirements and may accept up to 112 semester credits (153 quarter hours) from a four-year college or university. No credit is allowed for vocational/technical, remedial, or religious/doctrinal work. A maximum of 60 semester credits of extension and correspondence work (not to include more than 30 semester credits of correspondence) may be allowed if the above conditions are met.

The College of Business and Administration generally limits its transfer credit for business courses taken at the lower division level. All courses in the area of emphasis must be taken at the University of Colorado. A minimum of 60 semester hours (90 quarter hours) of work from a two-year institution may be applied toward baccalaureate degree requirements. All correspondence courses are evaluated to determine their acceptability, and business courses may not be taken through correspondence.

The College of Engineering and Applied Science, in general, requires that engineering course transfer credit must come from an ABET accredited engineering program to be acceptable for degree purposes. Engineering technology courses are not considered equivalent to engineering courses.

Readmission Requirements for Former and Returning Students
CU-Denver students who have not registered and attended classes at CU-Denver for one year or longer, and who have not attended another institution since CU, are returning students and must formally apply for readmission. Application forms are available at the Office of Admissions Processing.

Students who have attended another college or university since last attending the University of Colorado must apply as transfer students and meet the transfer student deadlines for receipt of documents. This requires payment of the $30 (subject to change) non-refundable application fee and submission of official transcripts from all colleges and universities previously attended. Transcripts must be sent directly from the issuing institution to CU-Denver, Admissions Processing, Campus Box 167, P.O. Box 173364, Denver, CO 80217-3364.

Students who have not attended the University for up to one year but have attended another college or university in the interim are required to pay a $30 (subject to change) transfer application fee. Transcripts must be requested by the student and sent by the registrar of the other institution(s) to CU-Denver, Admissions Processing, Campus Box 167, P.O. Box 173364, Denver, CO 80217-3364.

Students who last attended another CU campus (including the Division of Extended Studies) must formally apply for readmission. Application forms are available from the Office of Admissions Processing.
Admission Requirements for International Students

The University of Colorado at Denver encourages international students to apply for admission to undergraduate and graduate programs.

Undergraduate: Admission requirements for CU-Denver’s schools and colleges vary, and international students seeking admission must meet the requirements of the program to which they are applying. In addition, all international students whose first language is not English are required to have a minimum TOEFL score of 525. Prospective students should request an International Student Application packet from the Office of Admissions Processing. Information about requirements for each CU-Denver college and school can be found in this catalog.

Deadlines for receipt of documents have been established to allow for the timely mailings of I-20’s. Contact the Office of Admissions Processing for these dates.

Graduate: International students who wish to pursue graduate study at CU-Denver must have earned an undergraduate bachelor’s degree, or its equivalent, and must fulfill all other requirements of the graduate program to which they are applying. In addition, all international students whose first language is not English are required to have a minimum TOEFL score of 525. Applications are available from The Admissions Processing Office six months prior to the term for which the student is applying.

Note: Except for summer terms, international students must be in a degree-seeking status. They may attend summer terms as non-degree students. This exception is strictly limited to summer terms.

CU-Denver Intra-University Transfer or Change of Campus (Including Extended Studies)

CU-Denver students may change colleges or schools within CU-Denver provided they are accepted by the college or school to which they wish to transfer. CU-Denver Intra-university Transfer Forms may be obtained from the Office of Admissions. Students should observe application deadlines indicated in the current Schedule of Classes. Decisions on intra-university transfers are made by the college or school to which the student wishes to transfer.

CU-Denver students may change University of Colorado campuses by applying directly to the Admissions Processing Office of the campus to which they wish to transfer. Change of Campus applications and deadline information also must be obtained from the campus to which the student is applying.

Extended Studies students wishing to enroll in regular CU-Denver courses or degree programs should contact the Office of Admissions Processing.

High School Concurrent Enrollment

High school juniors and seniors with demonstrated academic abilities may be admitted to CU-Denver with special approval for one term only. This approval may be renewed. Credit for courses taken may subsequently be applied toward a University degree program. For more information and application instructions, contact the CU-Denver Office of Admissions Processing (303-556-2704).

Admission of Graduate Degree Students

All correspondence and questions regarding admission to the graduate program at CU-Denver should be directed to the following:

Programs in Business
Graduate Business Programs
Graduate School of Business Administration
595-4007

Programs in Architecture and Planning
School of Architecture and Planning
556-3382

Programs in Public Affairs
Graduate School of Public Affairs
820-5600

All Other Programs
The Graduate School
556-2663

GRADUATE PROGRAMS

Graduate degree programs are offered through The Graduate School by its member schools and colleges (School of Education, College of Engineering and Applied Science, and College of Liberal Arts and Sciences), and by the Graduate School of Business Administration, the School of Architecture and Planning, and the Graduate School of Public Affairs.

GRADUATE ADMISSION REQUIREMENTS AND APPLICATION DEADLINES

Admission requirements and application deadlines vary according to the individual graduate program. The Graduate School has general admission requirements which are supplemented by specific requirements of the major departments of graduate study (e.g., electrical engineering, education, English, etc.). Applicants should consult the general information section of The Graduate School portion of this catalog, as well as the college or school sections, for requirements and deadlines for specific programs.

Admission of Non-Degree Students

Persons who have reached the age of twenty and who want to take University courses but do not plan to work toward a University of Colorado degree at this time may be admitted as non-degree students provided that they are academically eligible and admissible. Correspondence and questions regarding admission as a non-degree student should be directed to the Office of Admissions Processing. Those seeking admission as non-degree students for the purpose of teacher certification should contact the School of Education, 556-2717. Each school/college limits the number of semester hours that are transferable to a degree program. Students considering changing from non-degree to degree status should contact the school/college to which they will be applying (as a degree student) for information about the number of hours that may be taken as a non-degree student.

Courses taken as a non-degree student are for credit and may be used for transfer to other institutions or for professional improvement.

Note: International students are not admitted as non-degree students, except for summer terms. They must hold a valid visa.

Students with the baccalaureate degree who are not accepted to specific degree programs may enroll for course work as non-degree students. There are several types of these students. Among them are teachers who seek renewal of certification; students who wish to take additional course work for professional or personal improvement; and students who feel a need to make up deficiencies before entering a specific program.

Non-degree students should be aware that generally only a limited number of
## UNDERGRADUATE AND NON-DEGREE STUDENT ADMISSION INFORMATION

<table>
<thead>
<tr>
<th>Type of Applicant</th>
<th>Criteria for Admission</th>
<th>Required Credentials</th>
<th>When to Apply</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FRESHMAN</strong> (Student seeking bachelor's degree who has never attended a collegiate institution)</td>
<td>Complete application $30 applicable fee Official high school transcript showing rank-in-class, date of graduation, 6th semester grades, courses in progress, Official ACT or SAT score report</td>
<td>Not later than: July 22 for fall Dec. 1 for spring May 3 for summer Seniors who meet or exceed all admission criteria may apply as early as Oct. 1 for following Fall.</td>
<td>For specific requirements refer to the college sections of this bulletin. For example: Music requires an audition.</td>
<td></td>
</tr>
<tr>
<td><strong>TRANSFER</strong> (Student seeking a bachelor's degree who has attended a collegiate institution other than CU)</td>
<td>Complete application $30 application fee Two official transcripts sent from each college attended</td>
<td>Not later than: July 22 for fall Dec. 1 for spring May 3 for summer</td>
<td>Liberal Arts and Music transfers with fewer than 12 sem. hrs. of college work. Business transfers with fewer than 24 sem. hrs., and Engineering, transfers with fewer than 24 sem. hrs. must also submit all freshman credentials.</td>
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</tr>
<tr>
<td><strong>RETURNING CU STUDENT</strong> (Returning non-degree and or degree student who has not attended another institution since CU)</td>
<td>Must be in good standing Completed degree</td>
<td>Not later than: July 22 for fall Dec. 1 for spring May 3 for summer</td>
<td>Non-degree students who have earned a baccalaureate degree should see Graduate School section for additional information.</td>
<td></td>
</tr>
<tr>
<td><strong>FORMER CU STUDENT</strong> (Degree student who has attended another institution since attending CU)</td>
<td>Same as for transfer Complete application $30 application fee two official transcripts from each intervening college Not later than: July 22 for fall</td>
<td>Dec. 1 for spring May 3 for summer</td>
<td>Will be admitted to their previous major unless a new major is requested. Students under academic suspension in certain schools or colleges at the University of Colorado may enroll during the summer terms to improve their grade-point averages.</td>
<td></td>
</tr>
<tr>
<td><strong>CHANGE OF STATUS: NON-DEGREE TO DEGREE</strong> (CU non-degree student who wishes to enter a degree program)</td>
<td>Must have completed degree Non-degree student application $15 application fee</td>
<td>Not later than: July 22 for fall Dec. 1 for spring May 3 for summer</td>
<td>Only students who have completed and received degrees are eligible to change to non-degree status.</td>
<td></td>
</tr>
<tr>
<td><strong>INTERCAMPUS TRANSFER</strong> (Student who has been enrolled on one CU campus and wishes to take courses on another)</td>
<td>Must be in good standing Completed degree</td>
<td>Transfer to Denver, not later than: July 22 for fall Dec. 1 for spring May 3 for summer</td>
<td>Transfers from Denver to another campus of CU should refer to the bulletin of the campus to which they are applying for additional requirements. Will be admitted to previous major unless a different major is requested on application.</td>
<td></td>
</tr>
<tr>
<td><strong>INTRAUNIVERSITY TRANSFER</strong> (Students who wish to change from one CU college to another, e.g., from the College of Liberal Arts and Sciences to the College of Business)</td>
<td>Same as for transfer. Must be a continuing student enrolled on the campus to which you are applying. Intrauniversity transfer application CU transcript</td>
<td>60 days prior to the beginning of the term</td>
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</tr>
</tbody>
</table>

1. Requirements for individual schools or colleges may vary.  
2. Foreign students should see International Students in the Admissions section of this catalog.  
3. Applicants who have earned 12-29 semester hours must meet freshman standards or have a minimum transfer GPA of 2.5. (Applicants transferring from Colorado School of Mines, CSU, UNC, UCB, or UCSC must have a minimum transfer GPA of 2.0.)
course credits taken by a non-degree student may be applied later toward a degree program at CU-Denver.

To continue registration as a non-degree student, a minimum grade-point average of 2.0 must be maintained.

HOW TO APPLY FOR NON-DEGREE STUDENT ADMISSION

To apply for admission as a non-degree student, obtain a Non-degree Student Application form from the Office of Admissions Processing. Return completed application by the deadline for the term desired. A $15 (subject to change) nonrefundable application fee is required.

No additional credentials are required. Applicants who seek teacher certification must apply separately to the School of Education and submit the required credentials. Non-degree students are advised that registration for courses is on a space available basis.

CHANGING STATUS FROM NON-DEGREE TO DEGREE STUDENT

Non-degree students may apply for admission to an undergraduate degree program by following the instructions outlined in the Non-degree to Degree procedures available from the Office of Admissions. Academic credentials (i.e., transcripts and/or test scores) and a $30 (subject to change) nonrefundable application fee also must be submitted. Non-degree students who are accepted as undergraduate degree students may generally transfer a limited number of semester hours for courses taken as a non-degree student to an undergraduate degree program with the approval of their academic dean. Non-degree students should consult with the college to which they are applying during the first semester of their enrollment for the maximum number of semester credit hours acceptable toward a degree program as a non-degree student. (Students enrolled as non-degree students prior to the Fall Semester of 1970 are subject to the policies in effect between January of 1969 and August of 1970.)

Non-degree students may apply for admission to a graduate program by completing the application required by the particular program. The graduate dean, upon recommendation by the department, may accept up to 8 semester hours of credit toward the requirements for a master's degree for courses taken as a non-degree student at the University or at another recognized graduate school, or some combination thereof. The department may recommend acceptance of additional credit for courses taken as a non-degree student during the semester the student has applied for admission to the desired degree program.

Official Notification of Admission

Official notification of admission to CU-Denver as an undergraduate, graduate, or non-degree student is provided by the Office of Admissions Processing. Letters from various schools and colleges indicating acceptance into a particular program are pending subject to official notification of admission to the institution. Applicants who do not receive official notification of admission within a reasonable period of time (approximately 3 weeks) after submitting all application materials should contact the Office of Admissions Processing (303) 556-2704.

Tentative Admission. Students who are admitted pending receipt of additional documents will be permitted one term to submit the documents. If temporarily waived official documents are not received by the end of the initial term of attendance, registration for subsequent terms will be denied. If at any time additional credentials are received without affecting your qualifications, the University reserves the right to change the admission decision.

TUITION AND FEES

General Information

All tuition and fee charges are established by the Board of Regents, the governing body of the University of Colorado, in accordance with legislation enacted annually (usually in the spring) by the Colorado General Assembly. The Regents reserve the right to change tuition and fee rates at any time. A tuition schedule is published prior to registration for each term, and students should contact the Records Office for further information on the tuition and fee charges for a particular term. The following rates are for the 1991–92 academic year and are provided to assist prospective students in anticipating cost.

Other Fees

1. Student Activity Fee (required for all students):
   For each term $37.00

This fee supports the activities of the student government and helps provide legal services, recreational activities, student health services, the student newspaper, the Center for Student Counseling and Testing, and various student organizations. The fee is approved by student referendum and is required of all students at the University of Colorado at Denver. (The fee includes a Student Health fee.)

2. Auraria Bond Retirement Fee (required for all students):
   Each term $35.50

3. Student Information System Fee
   (a non-refundable fee required of all students each term) $5.00

4. Matriculation Fee
   (mandatory for the first term for all new students): $25.00
   This is a non-refundable fee charged at the student's first registration to cover costs of generating transcripts.

5. Information Technology Fee $10.00
   The Information Technology Fee provides for capital acquisition of new and/or upgraded systems to support student computing laboratories to include networks and networking infrastructure and facilities directly accessible by students each term.

6. Doctoral dissertation fee (mandatory for all students certified by The Graduate School for enrollment for doctoral dissertation). Students should contact The Graduate School for guidelines established for charges for enrollment.

7. Comprehensive examination fee: Any student in The Graduate School, the Graduate School of Business Administration, or Graduate School of Public Affairs must be enrolled during the term in which the Comprehensive Examination for a master’s degree is completed. Students who are not taking regular courses during that term must enroll as “Candidate for Degree.” Students enrolled only as “Candidate for Degree” pay the corresponding resident tuition for one credit hour. The charge varies by the school in which the student is matriculated.

8. Laboratory breakage fee (mandatory for students enrolled in a chemistry laboratory course):
   Breakage deposit $20.00
   An $8 deduction is assessed for expendable items. After accounting for breakage, the unused portion is returned at the end of the semester.

Subject to change.
9. **Music laboratory fee** (mandatory for music majors and others enrolled in music courses):  
Music fee: $24.00  
Music majors and others enrolled in piano, sound recording and reinforcement, and electronic music must pay this fee. No student is charged more than one $24 fee during a given term.

10. **South African Scholarship Fund.** The Regents have authorized the University of Colorado to accept voluntary student contributions of $1.00 per student per semester to be dedicated to scholarship and bursaries for the higher education of needy South African students at South African universities or at the University of Colorado. Students who wish to contribute to this fund should submit a contribution card to the Bursar’s Office before the end of the drop/add period each semester.

### Payment of Tuition and Fees

All tuition and fees (except the application fee) are assessed and payable when the student registers for the term, according to guidelines in the current *Schedule of Classes*. Students who register for 7 or more credit hours may arrange at the time of registration to defer payment of part of the charges. Specific information on deferred payment is included in the *Schedule of Classes* published before each semester or summer term. Students who fail to complete payment by the published deadlines, or who fail to file the required promissory note, will be assessed a $50 penalty.

Students who register in a non-degree status and who later change to a degree status for that term, are responsible for the difference in tuition between the non-degree program and their applicable degree program and will be billed accordingly.

Students who register for courses are liable for payment of tuition and fees even though they may drop out of school. Refund policies for students who withdraw from the University are included in the *Schedule of Classes*. A student with financial obligations to the University will not be permitted to register for any subsequent term, to be graduated, to be issued transcripts, or to be listed among those receiving a degree or special certificate. The only exception to this regulation involves loans and other types of indebtedness which are due after graduation.

Personal checks are accepted for any University obligation. Any student who pays with a check that is not acceptable to the bank will be charged an additional service charge. Students may pay tuition and fees by credit card.

### Tuition Appeals

Exceptions to financial obligations incurred may be granted by the Tuition Appeals Committee. The Committee will only consider appeals when a student has been medically disabled, has experienced a death in the family, or has a change in employment hours or location beyond the student's control. Documentation of these conditions will be required. Exceptions will not be considered for a student's failure to comply with published deadlines, or changes in employment under the student's control.

*Please note:* tuition appeals must be filed within four months of the end of the term for which the appeal is filed.

### FALL AND SPRING 1991–92 TUITION

#### UNDERGRADUATE DEGREE STUDENTS IN THE COLLEGE OF LIBERAL ARTS AND SCIENCES and non-degree students without an undergraduate degree

<table>
<thead>
<tr>
<th>Credit Hrs.</th>
<th>Resident</th>
<th>Non-resident</th>
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<tbody>
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<td>0-1</td>
<td>$97</td>
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<td>679</td>
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</tr>
<tr>
<td>8</td>
<td>776</td>
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<tr>
<td>9-15</td>
<td>809</td>
<td>3,573</td>
</tr>
</tbody>
</table>

Each credit hour over 15: 97 / 429

#### GRADUATE DEGREE STUDENTS: with programs in the College of Liberal Arts and Sciences

<table>
<thead>
<tr>
<th>Credit Hrs.</th>
<th>Resident</th>
<th>Non-resident</th>
</tr>
</thead>
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<td>$142</td>
<td>$476</td>
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<tr>
<td>9-15</td>
<td>1,185</td>
<td>3,969</td>
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</table>

Each credit hour over 15: 142 / 476

### NON-DEGREE STUDENTS: with programs in the School of Architecture and Planning and in the Graduate School of Business Administration

<table>
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Each credit hour over 15: 152 / 507

### UNDERGRADUATE DEGREE STUDENTS IN THE COLLEGE OF BUSINESS AND THE COLLEGE OF ENGINEERING

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Each credit hour over 15: 112 / 446
GRADUATE DEGREE STUDENTS: with programs in the College of Engineering, and the Graduate School of Public Affairs

<table>
<thead>
<tr>
<th>Credit Hrs</th>
<th>Resident</th>
<th>Non-resident</th>
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<tr>
<td>9-15</td>
<td>1,397</td>
<td>4,225</td>
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</tbody>
</table>

each credit hour over 15 | 168 | 507 |

GRADUATE DEGREE STUDENTS: in the School of Education

<table>
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<th>Credit Hrs</th>
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<th>Non-resident</th>
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<td>9-15</td>
<td>1,397</td>
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</tbody>
</table>

each credit hour over 15 | 156 | 507 |

Graduate degree students who are registered as "candidate for degree" will be assessed the corresponding resident tuition for one credit hour plus the Student Information System Fee.

*Non-degree students who have previously earned a baccalaureate degree are classified as graduate students and assessed graduate tuition regardless of the level of the class(es) they are taking.

THE BOARD OF REGENTS OF THE UNIVERSITY OF COLORADO RESERVES THE RIGHT TO CHANGE TUITION AND FEES AT ANY TIME.

Audit

To qualify as an auditor for fall or spring semester, a student must be 21 years of age or older or approved by the Registrar. Auditors may not be registered for any other University of Colorado courses during the time they are auditing and are not eligible to audit courses if they are under suspension from the University or have outstanding financial obligations to the University. The Records Office does not keep any record of courses audited; therefore, credit for these courses cannot be established. Auditors may attend as many courses as they wish (except those courses with laboratories or where special equipment is used), provided they have received permission from each instructor. Auditor's cards are issued after classes begin. This card should be presented to the instructor when requesting permission to attend a class.

Auditors, whether resident or nonresident, pay resident tuition for the audited courses during the fall or spring semester for class instruction and library privileges only. Auditors do not receive student parking privileges, and are not eligible for other student services.

Residency Classification for Tuition Purposes

Tuition classification is governed by CRS 23-7-101, et seq. (1973) as amended. Institutions of higher education are bound to the provisions of this statute and are not free to make exceptions to the rules set forth.

The statute provides that an in-state student is one who has been a legal domiciliary of Colorado for one year or more immediately preceding the beginning of the term for which the in-state classification is being sought. Persons over 22 years of age or who are emancipated establish their own legal domicile. Those who are under 22 years of age and unemancipated assume the domicile of their parent or court appointed legal guardian. An unemancipated minor's parent must, therefore, have a legal domicile in Colorado for one year or more before the minor may be classified as an in-state student for tuition purposes.

Domicile is established when one has a permanent place of habitation in Colorado and the intention of making Colorado one's true, fixed, and permanent home and the intention of making Colorado one's true, fixed, and permanent home. The question of domicile rests with the Classification Officer. Opinions of other persons are not official or binding upon the University.

Resident Tuition for Active Duty Military Personnel

The Colorado Legislature approved resident tuition beginning with the Fall 1986 Semester for active duty military personnel on permanent duty assignment in Colorado and for their dependents.

ELIGIBLE STUDENTS MUST BE CERTIFIED EACH TERM. Students obtain a completed verification form from the base education officer, and submit the form with their military ID to the Records Office after they

\[1\text{A copy of the Colorado Revised Statutes (1973), as amended, is available in the University of Colorado at Denver Admissions Office.} \]
have registered, but before the end of the drop/add period. At that time the student’s bill will be adjusted to reflect the resident tuition rate. Students who have been certified remain classified as non-residents for tuition purposes and must petition to change their status once they establish permanent ties to Colorado.

**FINANCIAL AID**

**Director:** Ellie Miller  
**Office:** NC 1030  
**Telephone:** 556-2886

The Office of Financial Aid/Student Employment considers qualified students for financial aid awards. If the student’s application materials are received before the March 31, 1992, priority date, then the student is considered for a package of need-based grant, work-study (part-time employment), and/or long-term loan funds. If applications are received after the March 31 priority date, the student is usually considered only for Pell Grant and/or outside student loans (Stafford Loan—a formerly Guaranteed Student Loan or GSL, Parents Loan for Undergraduate Students, and Supplemental Loan for Students). These funds are not allocated to CU-Denver; they are available throughout the year to students who qualify. There are three separate deadlines for applying for Advantage Scholarship; refer to the separate brochure for further information.

Applicants for Colorado Fellowship, Jeans Scholars, and Regents Scholars are subject to different deadlines and are reviewed by other CU-Denver departments (The Graduate School, undergraduate dean’s offices, and the Office of Admissions respectively). All other students are notified of their award status in writing by the Office of Financial Aid/student Employment.

**Eligibility**

Each student must qualify for CU-Denver financial aid as follows:

1. Be a U.S. citizen or be admitted to the U.S. by the INS on a permanent basis (except for Colorado Fellowship).
2. Be classified as a degree-seeking student (except for students applying for Advantage Scholarships). Teacher certification students are eligible to apply as undergraduate students for outside student loans (Stafford Loan, Parents Loan for Undergraduate Students, or Supplemental Loan for Students).
3. Be enrolled for a specified minimum number of credits.
4. Maintain satisfactory academic progress as defined for the financial aid programs.
5. Apply for financial aid by submitting all of the required documentation including the need analysis form (except for Colorado Fellowship, Colorado Scholars, Deans Scholars, Regents Scholars, and Emergency Short Term Loans).
6. Document financial need (except for the programs listed in #5).
7. Be classified as a resident for tuition purposes for the following programs: Colorado Student Grant, Colorado Student Incentive Grant, Colorado Graduate Grant, Colorado WorkStudy, Regents Scholarship, Deans Scholars, and Colorado Scholars.
8. Not be in default on any student loan or owe a refund on any educational grant.
9. Be registered for the draft or enlisted in the armed forces if required by Selective Service.

**Application**

Each applicant must complete the financial aid application materials for submission to the Office of Financial Aid. Complete information must be available to the financial aid counselors before eligibility can be determined.

**Limited Funds.** The majority of general financial aid funds are awarded on a first-come, first-served basis to eligible students who document financial need and complete their application process as soon as possible after January 1, 1992. Application completion is defined as having all of the required documents and the results of the need analysis (ACT Family Financial Statement, CSS Financial Aid Form, USAF Singlefile Form or the AFSA) into the Office of Financial Aid/Student Employment. General financial aid is awarded to eligible students until all of the funds are committed for the year. If you complete your file after March 31, 1992, your awards will probably be limited to the Pell Grant (for first undergraduate students only) and/or outside student loans (Stafford Loan, Supplemental Loans for Students, Parents Loan for Undergraduate Students). Please remember to reapply for financial aid each year.

It is the student’s responsibility to be sure application materials are complete. Please contact the Office of Financial Aid for application forms for complete details regarding financial aid. All financial aid application procedures are subject to change at any time due to revisions in federal and state laws, regulations, and guidelines.

**Qualification**

**Financial Need.** Most financial aid is based on the concept of financial need. Your financial aid counselor calculates financial need as: 1) cost of attendance, minus family contribution which is 2) student/spouse contribution, and 3) parents’ contribution (for dependent students only).

The cost of attendance is the cost to attend CU-Denver, including tuition and fees, room and board, books and supplies, transportation, and personal expenses. The Office of Financial Aid/Student Employment determines standard budgets for students based upon average tuition and fees charged and other budget items established by the Colorado Commission on Higher Education.

**Independent Student.** The federal government has specific guidelines that must be followed to define a self-supporting student (one who reports only his/her own income and assets when applying for aid). For 1992–93, a self-supporting student is one who is 24 years old or older as of December 31, 1992. If you are under 24, you are considered self-supporting if you fall into one of the following categories:

1. Single undergraduate student with no dependents who was not claimed as a dependent on your parents’ 1990 and 1991 federal income tax returns. Also, you must demonstrate that you are self-sufficient by having total income (including financial aid) of at least $4,000 annually for the two calendar years prior to your first receipt of federal financial aid.
2. Graduate or professional student who will not be claimed as a dependent on your parents’ 1992 federal income tax return.
3. Married and will not be claimed as a dependent on your parents’ 1992 federal income tax return.
4. Student with legal dependents other than a spouse.
5. Veteran of the U.S. armed forces.
6. Orphan or ward of the court.

If your student/spouse contribution plus your parents’ contribution is equal to or greater than the cost of attendance, you will not qualify for need-based financial aid. For 1991–92, the following budgets were used for room and board, transportation, and personal expenses per month: single students living with parents $347/month; single students not liv-
eligibility to apply for one type of financial aid at this time—Advantage Scholarship. 

The contributions from the student/spouse and from the parents of dependent students are calculated by a standardized formula that is required by federal law. The formula considers income, savings and other assets, family size, number of children in postsecondary school, medical expenses, and other factors. You may appeal for special consideration of your situation and in some cases the standardized contribution may be adjusted by recommendation of the Financial Aid Committee. FINANCIAL AID IS INTENDED TO SUPPLEMENT (NOT REPLACE) FINANCIAL CONTRIBUTIONS FROM YOU AND YOUR PARENTS.

Course Loads. General financial aid (work-study, grants, Perkins Loans) undergraduate recipients usually must carry at least 12 credit hours per semester and graduate students usually must carry at least five graduate credits per semester during the academic year (fall/spring). Higher or lower minimums may be required for individual awards (please check your award letter for the exact number of hours required). Pell Grant (available only to first undergraduates) and outside student loan recipients must carry at least six credits per semester for undergraduates and three graduate credits for graduates. Summer Term 1992 minimum course loads are as follows: Full-time: undergraduate—8 hours, graduate—3 graduate hours; Half-time: undergraduate—4 hours, graduate—2 graduate hours. Higher or lower standards may be required for individual awards. For further information contact the Office of Financial Aid/Student Employment.

Satisfactory Academic Progress. CU-Denver students must make satisfactory academic progress as defined by the Office of Financial Aid/Student Employment in order to be eligible and remain eligible for financial aid. Students are referred to the Satisfactory Academic Progress Policy for Financial Aid, available in the Office of Financial Aid.

Non-Degree Students. Non-degree students are not pursuing a degree in a technical sense and, therefore, are only eligible to apply for one type of financial aid at this time—Advantage Scholarship.

Continuing Education/Community College of Denver Courses. Classes offered through the CU-Denver Division of Extended Studies or through the Community College of Denver cannot be included when minimum course loads and satisfactory academic progress are determined. The exception to this policy is MATH 112 offered by the Community College of Denver.

Residency Status. You are required to be a resident of Colorado for a full calendar year before the Office of Admissions can consider classifying you as a resident for tuition purposes. Non-resident students are encouraged to obtain additional information from the Office of Admissions about appealing for resident status. As a resident student, you are potentially eligible for more financial aid programs since you can be considered for the State of Colorado aid funds.

Refunds and Repayments. Any refund of tuition and fees resulting from withdrawal or reclassification of tuition status must be applied against the recipient's financial aid awards before any payment is made to the student. Students may be expected to repay a portion of their award if they withdraw from CU-Denver.

Applications and Determinations. Students may appeal all decisions of the Office of Financial Aid/Student Employment by completing a Request for Appeal form and submitting it to the office. Appeals are considered within three weeks.

Reapply Each Year. Financial aid awards are not automatically renewed each year. Students must reapply and meet priority dates each year.

Award

Students are notified in writing of their financial aid eligibility approximately 6-12 weeks after all application documents have been received in the Office of Financial Aid. If awarded, an award letter is mailed which includes information such as the type(s) and amount(s) of aid awarded and the minimum number of credit hours that are required for the award(s).

Types of Aid

The following are federal programs:

1. Pell Grant. Your eligibility for the Pell Grant (federally funded) is determined before any other aid is awarded. Awards are defined by a strict formula provided by the federal government and amounts vary depending on the student's eligibility index, enrollment status, residency classification, and living status. Students are eligible for a Pell Grant if they have not received their first bachelor's degree by June 1, 1992.

2. Outside Student Loans. Your eligibility for all other types of aid should be determined prior to applying for outside student loans. The Stafford Loan (formerly Guaranteed Student Loan) program requires that you show financial need in order to qualify. Most single students who are working full time do not document sufficient financial need to qualify for the Stafford Loan. The primary purpose of this program is to make low-interest, long-term loans available to students to help them meet their postsecondary educational expenses. The Supplemental Loan for Students is a long-term loan program for students who do not document financial need for the Stafford Loan or who need additional funds. Undergraduate dependent students may not borrow the SLS because their parents are eligible to borrow under the same terms. The program for parents is called the Parent PLUS Loan for Undergraduate Students (PLUS).

3. Supplemental Educational Opportunity Grant (SEOG). A need-based grant program for students who have not yet obtained a bachelor's degree.

4. Perkins Loan (formerly National Direct Student Loan). The interest rate on this long-term loan is 5% and no payments are due until six or nine months (this time differs depending on when you first receive a Perkins Loan) after the student ceases to be enrolled at least half time.

5. College Work-Study. A program that allows students to work on a part-time basis on campus or off campus at nonprofit agencies to help meet their educational costs.

The State of Colorado funds the following programs:

1. Colorado Student Grant. A need-based grant for resident undergraduate students.

2. Colorado Student Incentive Grant. A need-based grant for resident undergraduates who have not yet obtained a bachelor's degree. This grant is funded 50% by the federal government and 50% by the State of Colorado.

3. Colorado Graduate Grant. A need-based grant for resident graduate students.

4. Colorado Work-Study. A program similar to the College Work-Study program, but limited to resident undergraduate students.
Scholarships

Following is a list of the major scholarships that are offered at CU-Denver. The first listing is for awards funded by the State of Colorado:

1. Regents Scholarship is offered to new freshmen and transfer students by the Office of Admissions (556-2704). New students will be automatically considered for this program.

2. Colorado Scholars is for undergraduate resident students who have a minimum of 3.2 cumulative grade-point average for at least 12 CU hours. Contact the Office of Financial Aid/Student Employment for the application procedures. The deadline for applying is March 31, 1992.

3. Deans Scholarships are awarded by undergraduate deans offices. Contact your dean’s office for more information.

The following programs are funded by CU-Denver:

1. Advantage Scholarship is for minority and/or first generation college students who meet the income guidelines. Contact the Office of Financial Aid/Student Employment for applications.

2. Nelson/Running Wolf Scholarship funds are provided to needy American Indian students. Contact the Office of American Indian Student Services Services (556-2860) for information.

3. Ahlin Fund assistance is available for mobility impaired students. Contact Student Counseling, Testing and Career Services (556-2815) for applications. Other scholarship information is available from the Office of Financial Aid/Student Employment, the Auraria Library Scholarship InfoBank in the reference section, and the Office of Student Counseling, Testing, and Career Services.

Other Sources of Financial Aid. There are several other sources of financial aid for students. Employment opportunities are listed in the Office of Financial Aid/Student Employment, the Auraria Student Assistance Center, and the Center for Internships and Cooperative Education. "Part-Time" undergraduate resident students who apply for College Work-Study and who do not document sufficient financial need may be considered for Colorado Need Work-Study. Students who participate in CMEA/OMS, the Pre-Collegiate Development Program, the Minority Scholars Program, or who apply for disadvantaged Scholarships are automatically considered for Challenge Scholarships. Graduate students should inquire about additional types of aid through their academic department. Students should be aware that Emergency Student Loans are available through the Office of Financial Aid/Student Employment as well as Financial Aid Advances. American Indian students should inquire in the Office of Financial Aid/Student Employment for information about Bureau of Indian Affairs or tribal scholarships.

REGISTRATION

Selecting an Academic Program and Courses

Students should review the following sections of this catalog that describe the academic programs available at CU-Denver, and that provide information by school or college on the various majors available, course requirements by major, course load policies, and other pertinent information.

Courses available during a particular semester or summer term are listed in the Schedule of Classes, published three months before the beginning of each term. Schedules are available from the Records Office.

Undergraduate students who need assistance in planning an academic program or in selecting courses should contact the academic unit in which they are enrolled to arrange for an advising appointment prior to registration. Graduate students should contact their respective graduate program for assistance.

Course Abbreviations

In general, the abbreviation preceding the course number identifies the department offering the course. The first digit in the course number indicates the recommended class level of the course:

The digit after the dash in the course number denotes the credit-hour value of the course. The 1-credit lecture/recitation period is 50 minutes long. Hence a student enrolled in a 3-credit hour course will attend class for 150 minutes per week during a 16-week term. A 3-credit hour course will require six to nine hours of work each week outside of class. A laboratory credit includes from two to four hours per week in the laboratory, drafting room or field. Unless the course descriptions specify laboratory work, it is understood that the classes consist of lectures and discussions.

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<tr>
<td>2000</td>
<td>Lower division</td>
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<tr>
<td>3000</td>
<td>Upper division</td>
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Orientation

An orientation program for all new students is held at the beginning of the fall and spring semesters, prior to the first day of classes. The orientation program conducted by the Office of Student Life provides information to new students about some of the activities and services available at CU-Denver. Information on the registration process and degree requirements is also provided. Academic orientation advising sessions are held during the term, before registration for the next term. Dates and times of new student orientations are published in the Schedule of Classes.

Registration

CU-Denver students can register from any touch-tone telephone. Students will be assigned a time to register and may register at or after their assigned time.
REGISTRATION PRIORITIES

Registration is by time assignment only. Continuing students, and new students admitted by the priority deadline, will have first priority in the following order: graduate students, new freshmen, fifth year seniors, seniors, juniors, sophomores, freshmen, and non-degree students. All students admitted after the priority deadline will be allowed to register in the order they are admitted.

Non-degree students who apply late should be prepared with alternate choices or classes because students in degree programs will register first. All non-degree students should contact the academic advisors of the degree programs in which they are interested in order to ensure that their classes will fulfill the requirements of the program.

Please note: some courses are not open for registration by non-degree students without special permission. Non-degree students should check the restrictions listed for each course in the Schedule of Classes.

POOLED COURSES AT METROPOLITAN STATE COLLEGE OF DENVER

Certain courses in the College of Liberal Arts and Sciences have been pooled with similar courses at Metropolitan State College of Denver (MSCD). CU-Denver undergraduate students may register for any of the pooled courses listed in the CU-Denver Schedule of Classes.

Pooled Course Restrictions

1. CU-Denver graduate students are not eligible to register for MSCD common pooled courses.
2. MSCD courses will not be included in the University of Colorado grade-point average. MSCD courses will appear on the University of Colorado transcript and will count in the hours toward graduation.
3. MSCD courses cannot be used to meet specific course requirements toward the major without prior approval of the student's dean. The last 30 semester hours applied toward the baccalaureate degree must be taken in residence at CU-Denver. MSCD common pooled courses will not satisfy this residence requirement.

INTERINSTITUTIONAL REGISTRATION

CU-Denver degree students may enroll in courses offered by the Community College of Denver, Front Range Community College, and Red Rocks Community College. Students must be enrolled at CU-Denver for at least one course during the semester or summer term to be eligible to register interinstitutionally. Registration is on a space available basis. Interinstitutional courses are evaluated for transfer credit and are not included in a CU-Denver student's grade-point average.

Concurrent Enrollment

Degree-seeking students who wish to attend two University of Colorado campuses concurrently must contact their school or college on their home campus. Concurrent registration is available only during fall and spring semesters.

A degree student registered on the Denver campus may take up to two courses or 6 semester credit hours (whichever is greater) on another CU campus if:
1. The student obtains a Concurrent Registration form from the office of the academic dean.
2. The course is a required course for the student's degree (not an elective) and not offered at CU-Denver.
3. The student obtains approval from the academic dean.
4. There is space available at the other (host) campus.
5. The student pays tuition at CU-Denver (home) campus at CU-Denver rates.
6. The home campus school or college arranges for space in the host campus classes.
7. The concurrent request is processed before the end of the drop/add period on both the host and home campuses. Students may not register for an independent study course through concurrent registration. Students may not take courses pass/fail or for "no-credit" through concurrent registration.

To drop a concurrent course during the host campus drop/add period, arrange the drop at the home campus school or college office. To drop a concurrent course after the end of the host campus drop/add deadline, drop the course at the host campus Records Office.

Study Abroad

The Office of International Education on the Boulder campus offers study abroad programs that are available for all CU students. More than 30 programs are offered around the world. Resident credit at lower division, upper division, or graduate levels can be earned depending on the program selected and, if appropriate, can be applied to the CU-Denver degree. Students also can apply their financial aid to CU-Boulder sponsored study abroad programs. For more information on the Denver campus, see the section on International Education on page 28.

Course Loads

Students wishing to take more than 18 semester hours (12 in the summer term) must have the overload approved by the dean of their college or school. Students should petition their academic dean.

Remember that a three-semester-hour course during a fall or spring semester will require six to nine hours of work each week outside of class; a three-semester-hour course during a summer term will require nine to thirteen hours of work each week outside of class.

Suggested maximum course loads for the fall and spring semesters for under-graduate students who are employed:

Employed
40 or more hours per week:
3–6 semester hours
30–39 hours per week:
5–8 semester hours
20–29 hours per week:
7–11 semester hours
10–19 hours per week:
9–15 semester hours

Students should consider their other obligations—academic, professional, and personal—before registering for courses.

GRADUATE RESTRICTIONS

No more than 15 semester hours taken by a graduate student during a fall or spring semester can be applied toward a graduate degree.

No more than 10 semester hours taken by a graduate student during a given summer term can be applied to a graduate degree.

Definition of Full-And Half-Time Status for Financial Aid and Loan Deferral: Fall and Spring

Individual students receiving financial aid may be required to complete hours in addition to those listed below. The exact requirements for financial aid will be listed in the student's financial aid award letter.

Fall and Spring: effective Fall 1987

Undergraduates and non-degree students:

Full-time ...... 12 or more semester hours
Half-Time ...... 6 or more semester hours
ACADEMIC POLICIES AND REGULATIONS

Advanced Standing and Advanced Placement Credit

Undergraduate students may obtain credit for lower-division courses in which they demonstrate proficiency by examination. By passing an examination, the student will be given credit for the course to satisfy lower division requirements and may be eligible to enroll in higher level courses than indicated by the student’s formal academic experience. Credit granted for courses by examination is treated as transfer credit without a grade but does count toward graduation and other requirements for which it is appropriate. There are three types of examinations as described below.

ADVANCED PLACEMENT PROGRAM

The Advanced Placement Program of the College Entrance Examination Board (CEEB) allows students to take advanced work while in high school and then be examined for credit at the college level. Students who take advanced placement courses and subsequently receive scores of 4 or 5 on the CEEB Advanced Placement Examination are generally given college credit for lower-level courses in which they have demonstrated proficiency and are granted advanced standing in those areas. Students with scores below 4 may be considered for advanced placement by the discipline concerned. All credit must be validated by subsequent academic performance. For more information contact your high school counselor or the Office of Admissions at CU-Denver.

CREDIT BY EXAMINATION

Degree students may take examinations for credit. To qualify for an examination, the student must be formally working toward a degree at CU-Denver, have a grade-point average of at least 2.0, and be currently registered. Examinations are arranged through the Records Office, and a nonrefundable fee is charged. Students should contact the office of the dean of the academic unit in which they are enrolled.

COLLEGE-LEVEL EXAMINATION PROGRAM

Incoming CU-Denver students may earn University credit by examination in subject areas in which they have demonstrated college-level proficiency.

Interested students are encouraged to take appropriate subject examinations provided in the College-Level Examinations Program (CLEP) of the College Entrance Examination Board testing service. For more information call the CU-Denver Testing Center at 556-2861.

Students who are interested in credit for CLEP examinations must contact the office of their school or college.

Credit for Military Service and Schooling and ROTC

MILITARY SERVICE AND SCHOOLING

To have credit for educational experiences evaluated, applicants with military experience should submit the following with their application: (1) a copy of DD Form 214 and (2) DD Form 295, Application for the Evaluation of Education Experiences During Military Service. USAF personnel may present an official transcript from the Community College of the Air Force in lieu of the DD Form 295.

Credit will be awarded as recommended by the Commission on the Accreditation of Service Experiences of the American Council on Education to the extent that the credit is applicable to the degree the student is seeking at CU-Denver.

Credit for courses completed through the U.S. Armed Forces Institute will be evaluated on the same basis as transfer credit from collegiate institutions.

RESERVE OFFICERS’ TRAINING CORPS (ROTC)

Students enrolled in Army or Air Force ROTC programs should consult with their college or school regarding the application of ROTC course credit toward graduation requirements. The College of Liberal Arts and Sciences allows a maximum of 6 semester hours of ROTC credit to be applied toward baccalaureate degree requirements. The College of Business and Administration stipulates that ROTC courses may be used for credit only for nonbusiness elective requirements and that no credit may be given for freshman and sophomore ROTC courses. Furthermore, a maximum of 12 semester hours may be applied toward baccalaureate degree requirements in business and then only if the ROTC program is completed.

Grading System and Policies

The following grading system and policies for pass/fail registration, dropping
and adding courses, and withdrawal from the University have been standardized for all academic units of the University.

**GRADE SYMBOLS**

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

- **A**—superior/excellent—4 credit points per credit hour.
- **B**—good/better than average—3 points per credit hour.
- **C**—competent/average—2 credit points per hour.
- **D**—minimum passing—1 credit point per credit hour.
- **F**—Failing—no credit points per credit hour.

Beginning with the Spring 1984 semester, the University approved the use of a PLUS/MINUS grading system, where a B+ corresponds to 3.3 credit points per credit hour, and a B- corresponds to 2.7 credit points per credit hour. Instructors may, at their discretion, use the PLUS/MINUS system, but are not required to do so.

**IP**—in progress—thesis 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.

**H/P/F**—honors/pass/fail—intended for honors courses; credit hours count toward the degree but are not included in the grade-point average.

**Special Symbols**

**NC**—indicates registration on a non-credit basis.

**W**—indicates withdrawal without credit.

*******—indicates the final grade roster was not received by the time grades were processed. Graduate students enrolled at the 5000 level of a 4000/5000 course will be expected to complete additional work and be evaluated according to the graduate standards specified by the course instructor.

An incomplete grade is only awarded when special circumstances prevent a student's completing a course during the term. Students have one year to complete an INCOMPLETE. After one year, an IW is regarded as a DROP-PASSING; an IF is a FAILING grade. Students should not re-register for courses in which they have received INCOMPLETEs.

Most schools and colleges require a contract between the instructor and student outlining the work necessary to "complete" the incomplete.

**MID-TERM GRADES**

Beginning with the Spring 1990 semester, instructors will be asked to assign mid-term grades for a small population of students. Students who may be in some academic difficulty may be contacted and counseled about support services available to them. **Please note:** academic support services are available to all students through the Office of Student Retention Services, NC 2012, 556-2324.

**PASS/FAIL PROCEDURE**

1. Students who wish to register for a course on a pass/fail basis must do so during the drop/add period. Changes to or from a pass/fail basis may be made only during the regular drop/add period.

2. Up to 16 semester hours of regular course work may be taken on a pass/fail basis and credited toward the bachelor's degree. Only 6 hours of course work may be taken pass/fail in any given semester.

3. Academic deans and faculty will not be informed of pass/fail registration. All students who register for a pass/fail appear on the regular class roster, and a normal letter grade is assigned by the professor. When grades are received in the Records Office, those registrations with a pass/fail designation are automatically converted by the grade application system. Grades of D and above convert to grades of P. Courses taken pass/fail will be included in hours toward graduation. Pass grades are not included in a student's grade-point average. An F grade in a course taken pass/fail will be included in the grade-point average.

4. The record of pass/fail registration is maintained by the Records Office.

5. Exceptions to the pass/fail regulations are permitted for specified courses offered by the School of Education, the Division of Extended Studies, and Study Abroad Programs.
6. Graduate degree students can exercise the P/F option for undergraduate courses only. A grade of P will not be acceptable for graduate credit to satisfy any Graduate School requirement.

7. Students who register for a course on a pass/fail basis may not later decide to receive a letter grade. Each school and college limits the hours and courses for which students may register on a pass/fail basis.

Please note: many other institutions will not accept a "P" grade for transfer credit.

NO CREDIT

Students may register for a course on a no-credit basis with the consent of their instructor and the dean of their school or college. File the no credit form in the records Office before the end of the drop/add period. Students who register for a course on a no credit basis may not later decide that they want a letter grade. Students may not register again for a course which has already been taken on a no credit basis.

SENIOR CITIZENS

Senior citizens (aged 60 and over) may audit classes for no charge. Contact the Division of Enrollment and Student Services at 556-8427, NC 2204.

GRADE-POINT AVERAGE

The grade-point average is computed by multiplying the credit points per hour (for example, B = 3) by the number of hours for each course, totaling the hours and the credit points, and dividing the total points by the total hours.

Grades of F, NC, *, **, W, IP, IW, and IF are not included in the grade-point average.

If an IP grade has not been completed within one year, the course is regarded as failed and a grade of F is automatically calculated in the grade-point average at the end of the one-year grace period.

If an IW grade has not been completed within one year, the course is regarded as dropped.

If a course is repeated, all grades earned are used in determining the grade-point average. The University of Colorado grade-point average does not include courses taken at other institutions.

The grade-point average of graduate students includes only courses, credit hours, and credit points accumulated while enrolled in a Graduate School Program.

The grade-point average does not appear on official transcripts issued from the Records Office but does appear on the Grade Report issued each semester.

Students should consult with the dean of their college or school for explanation of any exceptions made to the University uniform grade-point average.

Undergraduates and non-degree students must maintain a 2.0 grade-point average to remain in good standing. Graduate students must maintain a 3.0 GPA to remain in good standing. Students whose GPA falls below the 2.0/3.0 level are subject to probation or suspension. Such students will be notified by their school or college.

GRADE REPORTS

Grade reports are mailed to CU-Denver students approximately two weeks after the end of the term. To obtain replacement reports, students must present picture identification at the Records Office.

Student Classification

Students are classified according to the number of semester hours passed:

- Freshman: 0-29 hours
- Sophomore: 30-59 hours
- Junior: 60-89 hours
- Senior: 90+ hours

All transfer students will be classified on the same basis according to their hours of credit accepted by the University of Colorado.

Graduation

Undergraduates. Students who have completed 80 or more semester hours should make an appointment with the advising office of their school or college to determine what requirements remain for graduation. Students intending to graduate must file a Diploma Card with their school or college during the first week of their graduation term. Students will not be finally certified to graduate until final grades have been evaluated. After students have been certified to graduate they must reapply to return to CU-Denver.

Graduates. Students must file an Application for Candidacy and a Diploma Card with The Graduate School on the Denver campus during the first week of their graduation term. Check with The Graduate School for more complete information. Students will not be finally certified to graduate until final grades have been evaluated. After students have been certified to graduate, they must reapply to return to CU-Denver.

Commencement. Letters will be mailed in early April to students eligible to participate in the spring commencement. Information will be provided about ordering special display diplomas, being fitted for caps and gowns, and obtaining diplomas and transcripts with the degree recorded. Students graduating at the end of the summer term or the end of the fall semester may participate in the following spring commencement.

Transcripts

Transcripts of academic record at the University of Colorado (all campuses) may be ordered in person or by mail from the University of Colorado at Denver, Transcript Office, Campus Box 167, P.O. Box 173364, Denver, CO 80217-3364. Unofficial transcripts will not be available until approximately four weeks after final examinations. A transcript on which a degree is to be recorded will not be available until approximately eight weeks after final examinations. Requests should include the following:

1. Student's full name (include given or other name if applicable).
2. Student number.
4. The last term and campus the student attended.
5. Whether the current semester grades are to be included when a transcript is ordered near the end of a term.
6. Whether the request should be held until a degree is recorded.
7. Agency, college, or individuals to whom transcripts are to be sent. Complete mailing addresses should be included. Transcripts sent to students are labeled "issued to student."
8. Student's signature. (This is the student's authorization to release the records to the designee.)

There is no charge for individual official transcripts. Transcripts are prepared only at the student's request. A student with financial obligations to the University that are due and unpaid will not be granted a transcript. Official transcripts require five to seven working days to be generated. Unofficial copies of transcripts sent to CU-Denver from other institutions can be requested at the Records Office. Official transcripts should be requested directly from the issuing institution. Unofficial CU transcripts are available to students in the CU-Denver Records Office with the request made 48 hours prior to pickup. Students must present picture ID.
Adding and Dropping Courses¹

ADDITIONS COURSES

Students may add courses to their original registration during the first 12 (8 in the summer) days of full-term classes, provided there is space available. Instructor approval may be required after the first day/week of classes.

DROPPING COURSES

1. Students may drop courses without approvals during the first 12 days of the fall or spring semester (8th day of the summer term). Tuition will not be charged for the courses which are dropped as long as the student is not withdrawing. No record of the dropped course will appear on the student’s permanent record.

2. After the 12th day of a fall or spring semester (8th day of the summer term), the instructor’s signature is required and the instructor must indicate whether the student is passing or failing. If the student is passing, the course will appear on the student’s permanent record with the grade of W. If the student is failing, the course will appear on the permanent record with an F.

3. Dropping all courses requires an official University withdrawal form. Deadlines for module courses and intensive courses are published in the Schedule of Classes each term.

Withdrawal from the University

To withdraw from the University, students must obtain approval from their academic dean’s office, the Bursar’s Office, and the Records Office. The withdrawal date is recorded on the student’s permanent record page. If the withdrawal date is prior to the 13th day of the semester (9th day of the summer term), the courses will not appear on the student’s permanent record. If the withdrawal date is after the 12th day, the courses will appear with W grades. Students may not withdraw after the 10th week of the semester (7th week of the summer term) except under documented circumstances clearly beyond their control.

Students who are receiving veteran’s benefits or financial aid also must obtain the required signature of those respective offices. International students must obtain clearance from the Office of International Students.

A student who stops attending classes without officially withdrawing from the University will receive grades of F for all course work enrolled for during that term.

To withdraw from the University, graduate students must apply to the dean of their Graduate Program for permission to withdraw in good standing. Students who withdraw without communicating with the dean and without filling the appropriate Withdrawal Form will be marked as having failed their courses for the term.

Deadlines for module courses and intensive courses, as well as specific requirements and tuition adjustment, appear in the Schedule of Classes published prior to the beginning of each term.

Originality of Work

In all academic areas it is imperative that either work be original or explicit acknowledgment be given for the use of other persons’ ideas or language. Students should consult with instructors to learn specific procedures appropriate for documenting the work of others in each given field. Breaches of academic honesty can result in disciplinary measures ranging from lowering of a grade to permanent compulsory withdrawal from the University.

Family Educational Rights and Privacy Act

Periodically, but not less than annually, the University of Colorado informs students of the Family Educational Rights and Privacy Act, with which the institution intends to comply fully. The Act was designed to protect the privacy of educational records, to establish the right of students to inspect and review their educational records, 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 Family Educational Rights and Privacy Act Office (FERPA) concerning alleged failures by the institution to comply with the Act.

Local policy explains in detail the procedures to be used by the institution for compliance with the provisions of the Act. Copies of the policy can be found in the library on each of the several campuses of the University of Colorado.

The following items of student information have been designated by the University of Colorado as public or directory information: student name, address, telephone number, dates of attendance, registration status, class, major field of study, awards, honors, degree(s) conferred, past and present participation in officially recognized sports and activities, physical factors (height, weight) of athletes.

University of Colorado at Denver Confidentiality of Academic Records

STUDENTS:

DO have the right to view and inspect their educational records (excluding any financial records of their parents).

DO have the right to have Directory Information withheld from all persons or organizations outside the University.

Directory Information includes:

- address, telephone number
- date and place of birth
- dates of attendance, registration status, class, major field of study
- awards, honors, degree(s) conferred
- past and present participation in officially recognized sports and activities
- physical characteristics (height, weight) of athletes

DO NOT have the right to obtain their grades, or other information not considered Directory Information, by telephone.

¹For the exact dates, check the Schedule of Classes for the appropriate term.
PARENTS:
DO have the right to obtain the educational records of their child only if they provide a signed statement that their son or daughter is a dependent as defined by the U.S. Internal Revenue Service. The Records Office, in NC 1003, 556-2389, has forms available to parents for such requests. Parents are, however, encouraged to obtain final grades with a written approval from the student.

UNIVERSITY OF COLORADO PERSONNEL:
DO have the right to use educational records of students in the normal exercise of their duties.
DO NOT have the right to use educational records of students for employment purposes, for social organizations, for personal reasons, or for other non-educational interests, without written consent of the student.

PERSONS OR ORGANIZATIONS OUTSIDE THE UNIVERSITY OF COLORADO:
DO have the right to obtain the Directory Information listed above, unless the student has made a request for nondisclosure. When the term microfiche, or the computer terminal on-line file of the Student Information System indicates PRIVATE, inquirers will be told that no information can be released without the student’s written consent.

PERSONS OR ORGANIZATIONS PROVIDING FINANCIAL AID TO STUDENTS:
DO have the right to educational records of students only as necessary in determining and enforcing terms of financial aid.

PERSONS IN AN EMERGENCY:
DO have the right to obtain confidential academic records necessary to protect the health or safety of students and others, but such information will only be released by the Office of the Associate Vice Chancellor for Enrollment and Student Services, 556-8427.

These regulations are required by the Family Educational Rights and Privacy Act of 1974 (the Buckley Amendment). For further information, please call the Records Office at (303) 556-2389. Student records will be released only to the student with current, appropriate identification or upon written authorization of the student whose records are being requested.

SPECIAL PROGRAMS AND FACILITIES

Alumni Association

The CU-Denver Alumni Association provides programs and services which stimulate interest in, increases support for, and builds life-long commitment to the University of Colorado at Denver among its alumni, students, and the community. Founded in 1976, students automatically become members upon graduation. Friends and non-degree former students are also welcome to participate. The governing board is comprised of alumni representing all schools and colleges on campus.

Horizons, a newspaper published three times a year, is mailed to members of the association. Alumni are invited to attend periodic reunions and/or activities which might interest them. The Alumni Mack Easton Award, the Alumni Recognition Award, and the Alumni Legislative Award are bestowed each year at commencement and are sponsored by the Association. A program of alumni use of the campus recreation center and parking lots is also available through the Association.

Auraria Book Center

Student Union: ground level, 556-2320

Hours: M–Th 8–6, F 8–5, Sat. 10–3 except vacation and interim periods.

The Auraria Book Center carries academic, technical, reference, and exam preparation books in support of your higher education. Best sellers, new releases, and gift book selections change frequently and are often accompanied by displays of special value books in many subjects. For additional savings on general reading books, join the Auraria Book Club at the Book Information desk. Special orders and out of print searches are available at no charge.

Students: Bring your course printouts to locate textbooks! Subjects are arranged alphabetically; departmental abbreviations, course and section numbers are printed on a shelf tag below each required or optional textbook. When available, used textbooks sell for 75 percent of the new book price. A full refund is given for new and used books accompanied by your receipt and returned within the first three weeks of class for regular semesters and during the first week of class for short terms. Please read the refund policy attached to your receipt!

Macintosh, IBM, Zenith, and NeXT personal computer systems and a variety of software are offered to Auraria campus students at educational discount prices. A current, validated Auraria ID must be presented at the time of purchase. Rounding out the educational supply/campus life areas are insignia sportswear, gifts and cards, and supplies for school, office, art and design.

The Convenience Store is located near the main store in the Student Union lower mall and has extended hours for those wishing to buy snacks, magazines, sundries and school supplies. Used texts are bought back from students throughout the year, and merchandise refunds and exchanges also are performed here.

Auraria Reprographics offers full-service copying in the Convenience Store, M–Th 7:30 a.m.–6 p.m. and F 7:30 a.m.–5 p.m. Special papers, color copying, transparencies, reductions and enlargements, lamination and other options may be specified for jobs of all sizes. Worldwide FAX service and shipping of packages by UPS and Federal Express also are available.

A current picture ID is required for purchases paid for by check. The Book Center also accepts MasterCard, VISA, and American Express charges.

Computing Services

Computing, Information and Network Services supports computer and network use for both the academic and administrative communities at CU-Denver. All centralized administrative systems are developed, maintained, and processed by University Management Systems in Boulder with output processing and user support provided by Computing, Information and Network Services in Denver. Denver campus administrative applications are developed, maintained, and processed by Computing Services. Most academic processing is either done on campus or through one of several networks available through Computing Services.

The Denver campus maintains a VAX 8800 under VMS, and a 10-processor Sequent Symmetry under UNIX. A communications network allows access to all campus minicomputers and connection to CARL (Colorado Alliance of Research Libraries) on-line library services. The VMS and UNIX computers are connected to an Ethernet backbone and are nodes on the growing Colorado SuperNet which provides access to other Colorado universities and colleges, as well as the Westnet regional network, Bitnet and the Internet for national and international communications. There are over 1,400
personal computers located on the campus in ten teaching laboratories, three public labs, individual laboratories, and in offices.

Computing, Information and Network Services staff provide assistance to academic and administrative users on all available computing systems. Advisors and a full-time academic user service staff assist students and faculty with questions regarding software packages, programming, the use of computer systems, and software availability. Administrative users are assisted with planning, systems design, programming, and day-to-day computing activities by Computing, Information and Network Services user services and operations personnel. The Computing, Information and Network Services staff operates and maintains campus minicomputers, telecommunications equipment, and public laboratories. This staff also maintains personal computers and is available to assist faculty and staff with hardware and software planning, acquisitions, questions, and problems.

The goal of Computing, Information and Network Services is to assist all members of the CU-Denver community in using computing as an effective tool in their work. For further information and an informative booklet about computing at CU-Denver, please call 556-2583.

Division of Extended Studies

The Division of Extended Studies offers a wide variety of programs for individuals interested in continuing their personal and professional education. These programs include courses for academic credit, noncredit, and certificate courses for professional development and personal enrichment.

Extended Studies credit courses supplement the University's general course offerings and include weekend and evening options. Credit received for these courses appears on a CU-Denver transcript and can be applied toward degree programs. Tuition is charged separately from that for courses in the regular program. Noncredit courses explore a wide array of topics including personal and professional development, test preparation, foreign languages, computers, fine arts, writing and literature, and recreation.

Extended Studies offers University resources to employees in business, industry, governmental agencies, and professional organizations. A blend of education and training is provided in a variety of program areas, both credit and noncredit, through customized training, targeted short courses, seminars and workshops.

Individuals interested in obtaining a copy of the Division of Extended Studies Bulletin or other information are invited to call Extended Studies at 556-2735.

**University of Colorado Foundation, Inc.**

The University of Colorado Foundation, Inc. was established in 1967 by the Board of Regents to solicit, receive and administer gifts from private sources. In 1981 the CU Foundation established a Denver campus office.

The chief goal of the University of Colorado Foundation is to promote the general welfare, development, growth and well-being of the University of Colorado.

The University's academic leadership establishes priorities for private support. The Foundation then raises and manages private funds in support of CU's missions in teaching, research, and public service. Professional fundraisers generate interest and enthusiasm for the University, recruit and organize volunteers, solicit gifts, and assist donors in gift planning.

**International Education**

The University of Colorado at Denver through its Office of International Education (OIE) provides a variety of international focused programs, educational opportunities and services for students, foreign scholars, faculty, staff, and the greater Denver community. The Office oversees student study abroad programs, provides foreign student advising and assists foreign students with cultural/lifestyle concerns, expedites the exchange of students and faculty, hosts foreign visitors, promotes special relationships with foreign universities, sponsors public lectures, and advises graduate students and faculty concerning Fulbright scholarships.

The goals of OIE are to raise international awareness on the CU-Denver campus and, in particular, to provide an opportunity for students to gain the global competency needed in today's interdependent world.

**ACADEMIC PROGRAMS**

Each of the schools and colleges at CU-Denver provides international opportunities for students. (Please see individual school and college descriptions in this catalog.) The International Affairs Program in the College of Liberal Arts and Sciences is an interdisciplinary program open to all undergraduates. Students may pursue an Individually Structured Major, Minor or Certificate in International Affairs where they are given the maximum opportunity to design their own personalized course of study in cooperation with an International affairs faculty advisor. See International Affairs under College of Liberal Arts and Sciences in this catalog for further details or contact an advisor in the Office of International Education (OIE).

The College of Business and Administration and the Graduate School of Business Administration offer a number of courses in various aspects of international business. These courses can be taken on a selective basis. Alternatively, a set of courses can be taken to achieve an Area of Emphasis in International Business, either in connection with a bachelor's degree or in connection with an M.B.A. Available courses and requirements for Areas of Emphasis are described in this catalog under the College of Business/Graduate School of Business. For more information, students interested in international business studies should contact an advisor in the College of Business or the Graduate School of Business.

**STUDY ABROAD**

OIE provides an information clearinghouse and advising center for students wishing to make foreign study a part of their college experience. OIE works with the schools and colleges of CU-Denver in creating and facilitating new study abroad opportunities for students. CU-Denver students are also eligible for a number of study abroad programs offered through the University of Colorado at Boulder.

Some of the study abroad programs are of the traditional junior year abroad variety in which students are placed directly in foreign universities for an academic year. For students unable to spend an academic year abroad, programs for a single semester or summer are available with various emphases. Special summer programs, e.g., architecture study in Italy or Russian language study in Moscow, are organized with specific departments.

Students are enrolled at the University of Colorado while participating in many of these study abroad programs. The applicability of credit in particular departments and colleges of CU-Denver is up to the individual colleges and departments. A "B" average with the equivalent of two years of college level work in the appropriate language is required for many of the academic year programs. Financial aid can be applied to program costs in most cases.
FOREIGN STUDENT INFORMATION SERVICES

OIE realizes that the first few months in a new country and a new city are particularly difficult for foreign students. We provide a friendly ear and a place to ask immigration and visa questions as well as questions about lifestyle, U.S. customs, classroom expectations, and other such concerns. OIE also provides a center for networking with other CU-Denver foreign students.

FACULTY FOREIGN EXCHANGE PROGRAMS

OIE develops programs designed to increase faculty foreign research opportunities. Current efforts include agreements with Moscow University, Charles University in Prague in the Czech and Slovak Republic; Humboldt University in Berlin, Germany; Monash University in Melbourne, Australia; and Yunnan University in Kunming, China.

GRADUATE STUDENT AND FACULTY FULBRIGHT INFORMATION

OIE serves as the clearinghouse for information on the Fulbright graduate student fellowships and faculty visiting lectureships at foreign universities.

CONFERENCES AND COMMUNITY OUTREACH SERVICES

During the year, OIE sponsors a number of guest lectures, small conferences and special seminars focused on topics of current international interest. Most of these activities are open to the public as well as the CU-Denver community. OIE works closely with West High School, the Denver Public School System magnet school for International Studies. OIE is also an active participant in a number of Denver community international programs and events.

More information about these and other programs is available from the Office of International Education, (303) 556-3489.

Auraria Student Services

The Auraria Student Services Division offers the following:

1. Auraria Student Union - 556-3185
   The Student Union, located at 9th and Lawrence, houses a cafeteria, information desk, Book Center, study lounges, gameroom, ticket service, housing referral service, offices for student government and organizations, convenience store, copy center, exhibit space, locker rentals, lost and found, meeting and conference facilities, and the Mission Bar and Grill.

2. Conference Services - Student Union, Room 210, 556-2755
   Through the Conference Services office, campus space can be reserved for all non-academic purposes.

3. Disability Services Office - 177 Arts Building, 556-8397
   This office provides the following academic support services to students who have physical, learning, or psychiatric/emotional disabilities:
   - Taped textbooks
   - Sign language and oral interpreters
   - Notetakers
   - Scribing
   - Testing accommodation
   - Sale of handicap parking permits

4. Career Resources Center - 177 Arts Building, 556-3477
   The Career Resources Center offers assistance to students and alumni in planning their careers and seeking employment through the provision of on-campus employer interviews, current job vacancy listings, Campus Career Library, and a computerized career guidance system. The student employment office maintains a listing of part-time and temporary job openings for currently enrolled students. Additional services are offered in the same office by CU-Denver career counselors.

5. Auraria Child Care Center - 556-3188
   The Auraria Child Care Center serves the child care needs of Auraria Campus students, staff and faculty by providing high quality early childhood education and care programs. The Child Care Center is located on the southwest corner of the campus. Its programs are consistently recognized by the educational community for their high quality early childhood care and education. Developmentally appropriate practices for young children guide the educational programs that are provided. Curriculum planning is flexible and based on children’s interests. Experiences are planned in accordance with “Key Experiences” adapted from the High/Scope Cognitively Oriented Curriculum. Supervising and assistant teachers in the Child Care Centers are all degreed teachers meeting the certification guidelines of the National Academy of Early Childhood programs. Children aged 18 months to six years are served at the Auraria Child Care Center. The Center also has a fully accredited kindergarten program.

6. Spring International Language Center – St. Francis Center, 556-4255
   This center offers intensive English language instruction to foreign students. It is authorized by INS to issue I-20s in order for students to apply for F-1 visa status. In addition, SILC provides language proficiency testing services on request for students hoping to enter CU-Denver, MSCD or CCD. SILC classes are used for observation and research by individuals being trained on campus to become English as a Second Language teachers. SILC provides extensive support services to its students including a host family program, housing information, counseling services, and social activities designed to make the foreign student feel at home in the United States.

7. Emmanuel/Library Galleries - 556-8337
   The Emmanuel and Library Galleries host exhibits of students, faculty and nationally known artists. Stop in for a relaxing break.

8. Information Centers
   Students and visitors can find information and directions at the Information Desk in the Student Union, and at the Visitor Information Centers at Lawrence Way and at the St. Francis Center.

UNIVERSITY POLICIES

Affirmative Action/Equal Opportunity/Title IX

The University of Colorado at Denver is committed to enhancing the diversity of its work force and its student body. Diversity among faculty, staff, administrators, and students is essential to educational excellence and to accomplishing CU-Denver’s mission. Just as diversity in academic programs and scholarly perspectives enriches the University, so too does diversity among faculty, staff, administrators, and students. Diversity among faculty, staff, and administrators provides role models and mentors for students, who will become future leaders in academe and in the larger society, and ensures that a broad array of experiences and world views will inform and shape teaching, research, service, and decision making at CU-Denver.

As the only public university serving the Denver metropolitan area, CU-Denver recognizes, acknowledges, and accepts its central role in education to take explicit affirmative action to employ, retain, and advance in employment qualified applicants and employees, and to admit, retain, and advance qualified applicants and stu-
students regardless of their race, color, religion, national origin, gender, age, disability, or veteran status.

In employment and educational programs, CU-Denver does not discriminate and will not tolerate discrimination on the basis of race, gender, age, color, national origin, disability, or veteran status.

CU-Denver has adopted an affirmative action plan to implement these commitments. For information, contact the Office of Affirmative Action, CU-Denver Bldg., Room 700, 556-2509.

Ombuds Office

In any large organization, misunderstandings and disagreements may occur. The Ombuds Office helps to enhance the clarity and dissemination of information, to simplify decision making and communication, to assist with the process of change and with adjustment to change, and to improve understanding among staff, students, faculty, and administrators.

The Ombuds Office provides information about programs, policies, services, and procedures affecting members of the University community; makes referrals to appropriate state, CU system, and CU-Denver resources; serves as consultant in the preparation and review of policies and procedures; and assists in the solution of problems and the resolution of disputes.

The Ombuds Office services are informal, impartial, confidential, and independent of administrative authorities. These services do not replace or circumvent existing channels, but help them work more effectively. For further information or assistance, contact the Ombuds Office, CU-Denver Bldg., Room 850, 556-4493.

University Policy Regarding A Drug-Free Workplace

The University of Colorado at Denver is committed to providing a drug-free workplace and environment. The University prohibits the unlawful manufacture, distribution, dispensation, possession, or use of any controlled substance in the workplace. Those individuals who are found to be in violation are engaged in serious misconduct and subject to disciplinary action consistent with the Faculty Handbook (1988), the applicable rules of the State Personnel System, the University's Unclassified Staff Handbook, and the Student's Discipline and Review Procedures.

Academic Honor Code and Discipline Policies

Members of the University of Colorado at Denver feel it is an historically established rule of education that instructors have the authority to conduct classes, make assignments, require examinations or other exercises, and make judgments about the academic performance of students.

Maintaining the quality and high performance of students makes it imperative that the academic work completed at the University be original and completed honestly. It is the concern of every student and faculty member that such standards be maintained. A university's reputation depends on the highest standards of intellectual honesty and ethical conduct.

Academic disciplinary matters are concerns to be addressed by schools or colleges, allowing each school/college to determine the severity and consequences of each infraction. Under the Laws of the Regents, Article IX.2.B and Article V.1.C, all matters of educational policy affecting the school or college including academic requirements for admission, for continuance and for graduation shall be under the jurisdiction of each school or college. In addition, the college or school shall have jurisdiction over matters of academic ethics/academic dishonesty.

Each college and school is required to maintain a standing committee to decide cases of academic dishonesty as defined in this document. Students and faculty are urged to understand what constitutes academic dishonesty in order to better support and maintain high standards of academic scholarship and conduct.

FORMS OF ACADEMIC DISHONESTY

As members of the academic community, students and faculty accept the responsibility to conduct themselves with integrity in a manner compatible with the University's function as an educational institution. Furthermore, all members of the academic community have a special responsibility to ensure that the University's ethical standards are maintained. One of these standards is academic honesty. Many students underestimate how strongly most faculty and peers feel about academic honesty. Academic dishonesty is defined as a student's using unauthorized assistance with intent to deceive an instructor or such other person who may be assigned to evaluate the student's work, in meeting course and degree requirements. Examples of academic dishonesty include, but are not limited to the following:

A. Plagiarism

Plagiarism is the use of distinctive ideas or words belonging to another person without providing adequate acknowledgement of that person's contribution. Regardless of the means of appropriation, incorporating another's work into one's own requires adequate identification and acknowledgement. Plagiarism is doubly unethical because it deprives the true author of the rightful credit and gives that credit to someone who has not earned it. It is the theft of intellectual property. However, acknowledgement is not necessary when the material used is common knowledge. When the source is not noted, the following would constitute plagiarism:

1. Word-for-word copying.
2. The mosaic (to intersperse a few words of one's own here and there while, in essence, copying another's work).
3. The paraphrase (the rewriting of others' work, yet still using their fundamental idea or theory).
4. Fabrication (inventing or counterfeiting sources).
5. Ghost-written material (submitting another's effort as one's own).

It is also plagiarism to neglect quotation marks on material that is otherwise acknowledged.

B. Cheating

Cheating involves intentionally possessing, communicating, using (or attempting to use) materials, information, notes, study aids, cheat sheets, or other devices not authorized by the instructor in any academic exercise, or the communication with any other person during such an exercise.

Examples:

1. Copying from another's paper or receiving unauthorized assistance from another during an academic exercise or in the submission of academic material.
2. Using a calculator when the use has been specifically disallowed.
3. Collaborating with another student or students during an academic exercise without the consent of the instructor.

C. Fabrication and Falsification

This is the intentional and unauthorized alteration or invention of any information or citation in an academic exercise.

Examples:

1. Fabrication involves inventing or counterfeiting information; i.e., creating
results not obtained, as in a laboratory experiment.
2. Falsification involves altering results, deliberately changing information to suit one's needs.

D. Multiple Submission
This is the submission of substantial portions of either written or oral academic work which has previously earned credit when such submission is made without instructor authorization.

E. Misuse of Academic Materials
This is intentionally or knowingly destroying, stealing, or making inaccessible, library or other academic resource material.

Examples:
1. Stealing or destroying library or reference materials or computer programs or files.
2. Stealing or destroying another student's notes or materials, or having in possession such materials without the owner's permission.
3. Receiving assistance in locating or using sources of information in an assignment where such assistance has been forbidden by the instructor.
4. Illegitimate possession and disposition of examinations or answer keys to tests and examinations.
5. Unauthorized alteration, forgery, or falsification of official academic records.
6. Unauthorized selling or purchasing of examinations, papers, or assignments.

F. Complicity in Academic Dishonesty
This is 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.

PROCEDURES IN CASES OF SUSPECTED ACADEMIC DISHONESTY
Students concerned about academic dishonesty should contact their school or college for more specific information. Faculty and staff members or students may submit charges of academic dishonesty against students. A student who has evidence that another student is guilty of academic dishonesty should inform the instructor or the Dean of the appropriate college in writing of the charge. A faculty member who has evidence that a student is guilty of academic dishonesty should confront the student with the evidence. In cases of academic dishonesty, the faculty member has the authority to reprimand the student appropriately, which could include the issuance of a failing grade (F). In such case of issuance of failing grade for academic dishonesty, the faculty member shall submit a written report to the Dean of the appropriate college within five (5) working days. The report shall include, but is not limited to, the time, place, nature of offense(s), the name(s) of the accused, the accuser(s), witnesses (if any). If the faculty member feels that his or her reprimand or action is an insufficient sanction for a particular case of academic dishonesty, the faculty member may recommend to the Dean of the appropriate college that further action be taken.

This signed report recommends further action, the Dean or a committee designated shall schedule a disciplinary hearing as soon as possible. The student has the right to be represented by legal counsel and to be present during the committee's proceedings. Student(s) must notify the Dean of the appropriate college five (5) working days in advance of the hearing that he/she intends to have legal counsel present. The Dean or the committee designated may take any of the following actions:

1. Take no further action against the accused student(s).
2. Place student(s) on disciplinary probation for a specified period of time. The record of this would be kept in the committee's confidential files and the student's academic file.
3. Suspension of registration for a specified period of time. A record of this shall be kept in the committee's confidential file and a copy sent to the Registrar.
4. Expulsion: no opportunity to return to the college in which the infraction occurred. A record of this shall be kept permanently in the committee's confidential file and a copy sent to the Registrar.

Notification to Student(s)
In all cases, the student(s) should be notified of the hearing after seven working days, in writing of the Dean's or the designated committee's decision.

Interinstitutional Appeal Procedures
Students who are taking courses at CU-Denver, but are enrolled at other educational institutions on the Auraria campus and are charged with dishonesty, are subject to the same procedures outlined above.

Code of Student Conduct (Student Rights and Responsibilities and Procedures for Disciplinary Review and Action)

STANDARDS OF CONDUCT FOR WHICH ACTION MAY BE TAKEN IF A VIOLATION OCCURS

All persons on University property are required for reasonable cause to identify themselves when requested by University or Auraria Public Safety officials acting in the performance of their duties. Acting through its administrative officers, the University reserves the right to exclude those posing a danger to University personnel or property and those who interfere with its function as an educational institution.

All persons on CU-Denver/Auraria property who are not students or employees of the University are required to adhere to the Code of Conduct applicable to University students and to abide by University policies and campus regulations.

The behaviors outlined below will not be tolerated because they threaten the safety of individuals and violate the basic purpose of the University and the personal rights and freedoms of its members.

1. Intentional obstruction, disruption, or interference with teaching, research, disciplinary proceedings, or other University activities, including its public service and administrative functions or authorized activities on the CU-Denver/Auraria premises.
2. Willful obstruction or interference with the freedom of movement of students, school officials, employees, and invited guests to all facilities of the CU-Denver/Auraria campus.
3. Physical abuse of any person on property owned or controlled by the CU-Denver/Auraria Higher Education Center or at functions sponsored or supervised by the University, or conduct that threatens or endangers the health or safety of any such person.
4. Verbal or physical harassment and/or hazing in all forms, which includes, but is not limited to, striking, laying hands upon, threatening with violence, or offering to do bodily harm to another person with intent to punish or injure; or other treatment of a tyrannical, abusive, shameful, insulting, or humiliating
nature. (This includes, but is not limited to, demeaning behavior of an ethnic, sexist, or racist nature, unwanted sexual advances or intimidations.)

5. Prohibited entry to or use of CU-Denver/Auraria facilities, defined as unauthorized entry or use of CU-Denver/Auraria property or facilities for illegal purposes or purposes detrimental to the University.

6. Forgery, fraud (to include computer fraud), falsification, alteration, or use of University documents, records, or instruments of identification with intent to gain any unentitled advantage.

7. Theft or damage to CU-Denver/Auraria property and the private property of students, University officials, employees, and invited guests when such property is located upon or within CU-Denver/Auraria buildings or facilities. This includes the possession of known stolen property.

8. Possession of firearms, explosives, or other dangerous weapons or materials within or upon the grounds, buildings, or any other facilities of the CU-Denver/Auraria campus. This policy shall not apply to any police officer or other peace officer while on duty authorized by the University, or others authorized in writing by the Chief of the Auraria Public Safety or designee. (A dangerous weapon is an instrument that is designed to or likely to produce bodily harm. Weapons may include, but are not limited to, firearms, explosives, BB guns, slingshots, martial arts devices, brass knuckles, Bowie knives, daggers or similar knives, or switchblades. A harmless instrument designed to look like a firearm, explosive, or dangerous weapon which is used by a person to cause fear in or assault on another person is expressly included within the meaning of the terms firearms, explosive, or dangerous weapon.)

9. Sale, distribution, use, possession, or manufacture of illegal drugs within or on the grounds, buildings, or any other facilities of the CU-Denver/Auraria campus.

10. Physical restriction, coercion, or harassment of any person; significant theft; sale/manufacture of illegal drugs (includes possession of a sufficient quantity with intent to sell); damage, theft, or unauthorized possession of University property; or forgery, falsification, alteration, or use of University documents, records or instruments of identification to gain any unentitled advantage.

UNIVERSITY STANDARDS AND CRIMINAL VIOLATIONS

As a member of the University community, you are held accountable not only for upholding civil and criminal laws, but University standards as well. Enrollment does not confer either immunity or special consideration with reference to civil and criminal laws. 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 civil or criminal court. In addition, the University reserves the right to pursue disciplinary action if a student violates a standard and withdraws from the University before administrative action is final.

USE OF UNIVERSITY/AURARIA PROPERTY OR FACILITIES

Nothing in this Code of Conduct shall be construed to prevent peaceful and orderly assembly for the voicing of concerns or grievances. The University is dedicated to the pursuit of knowledge through a free exchange of ideas, and this shall be a cardinal principle in the determination of whether or not a proposed use of University facilities is appropriate.

The Auraria Higher Education Center has established campus regulations and procedures governing the use of CU-Denver/Auraria grounds, buildings, and other facilities. Such regulations are designed to prevent interference with University functions and activities. Except where otherwise specifically authorized, or when members of the public are invited, the use of CU-Denver/Auraria facilities shall be limited to faculty, staff, and students of the CU-Denver/Auraria campus, and to organizations having chapters, local groups, or other recognized University connected representation among faculty, staff, or students of the three academic institutions on the Auraria campus.

CLASSROOM CONDUCT

You are expected to conduct yourself appropriately in classroom situations. If disruptive behavior occurs in a classroom, an instructor has the authority to ask you to leave the classroom. Should such disorderly or disruptive conduct persist, the instructor should report the matter to Auraria Public Safety and/or the appropriate Dean’s office. The appropriate Dean or his/her representative may withdraw a student from a particular class for disruptive behavior, while the Student Discipline Committee may recommend to the Associate Vice Chancellor for Enrollment and Student Services to suspend, permanently expel, and/or permanently exclude the student from the campus. Appeal questions concerning disruptive behavior should be directed to the Academic Dean’s office when withdrawal from a class is involved, and to the Director of Student Life when suspension or expulsion from the University is involved.

NONACADEMIC DISCIPLINE POLICIES

Violations of Standards of Conduct should be reported to the Director of Student Life during working hours. Auraria Public Safety should be contacted during non-duty hours.

If a violation occurs on campus and it is not in a specific building, Auraria Public Safety and/or the Director of Student Life should be contacted.

Actions available to campus officials include, but are not limited to: asking those involved in inappropriate behavior to cease and desist; requesting offender(s) to leave the Auraria campus; denying or restricting use of facilities or services; calling Auraria Public Safety for assistance; billing offender(s) for any physical damages; pressing civil charges; and referring student(s) to the Director of Student Life. The chart that follows illustrates the overall structure involved.

DISCIPLINE STRUCTURE AT THE UNIVERSITY OF COLORADO AT DENVER

(1) Violations observed may be resolved by any of the following:
   - University Departments such as:
     a. Admissions
     b. Student Union
     c. University/Auraria Public Safety
     d. Financial Aid
     e. Veterans Affairs
     - Faculty/Staff
     - Students
     - Non-University Members

(2) If violation warrants further attention contact:
   - Director of Student Life
     a. If student(s) desires a review by the Director of Student Life. Academic dishonesty discipline falls under the jurisdiction of the individual colleges and schools.
     b. If violation warrants, possible suspension or expulsion
     - Student Discipline Committee
policies and procedures

When one of the 10 Standards of Conduct listed in this code is violated, the student may be referred to the Director of Student Life. Any person may refer a student or student group suspected of violating this code to the Director of Student Life. Persons making such referrals will be asked to provide information pertinent to the case. The Director of Student Life will make a determination as to the seriousness of the case. This will be done in most situations by asking the student(s) involved in the case to come in for an administrative interview to determine what actions, if any, will be taken by the University. Students will be notified in writing of the results of such administrative reviews.

The Director of Student Life has the authority to:

1. Dismiss the case.
2. Take no further action other than talking with the accused student(s).
3. Issue a University warning (a statement that a student’s behavior has been inappropriate and any further violation of University rules will result in stronger disciplinary action).
4. Place the student on disciplinary probation, a violation of the terms of which could result in suspension or expulsion from the University.
5. Refer cases to the Student Discipline Committee where the above sanctions are determined to be inadequate or the student(s) desires an appeal.
6. Take other actions including but not limited to counseling, insuring the violator(s) provides compensation for theft or damage, and/or placing stops on registration.

student discipline committee policies and procedures

Disciplinary proceedings shall be conducted as administrative proceedings and not as judicial proceedings. The University is not a part of the judicial branch of state government. The University has authority to promulgate and enforce internal rules of behavior that shall be administered in a fair and impartial manner in harmony with its educational objectives and administrative nature. As part of the administrative nature of the committee’s proceedings, fundamental rules of fairness will be followed. Copies of these procedures are available in the Office of the Associate Vice Chancellor for Enrollment and Student Services.

POLICIES

1. Dismiss the case.
2. Take no action other than talking with the accused student.
3. Issue a University warning (a statement that a student’s behavior has been inappropriate and further violation of University rules will result in stronger disciplinary action).
4. Place the student on disciplinary probation, a violation of the terms of which could result in suspension or expulsion from the University.
5. Recommend suspension of a student from the University for disciplinary reasons. This suspension may be for various lengths of time ranging from one semester to an indefinite period of time; after the period of disciplinary suspension has expired a student may apply in writing to have the notation on the student’s record removed.
6. Recommend expulsion of a student permanently from the University; notation on the student’s record will be kept permanently. When a student is suspended or expelled for disciplinary reasons an additional sanction may include being excluded from the Auraria campus.
7. Other sanctions including but not limited to counseling, insuring the violator(s) provides compensation for theft or damage, and/or placing stops on registration.

REVIEW PROCEDURES

A student may request a review of the recommendation of suspension or expulsion by the Student Discipline Committee within seven (7) working days to the Associate Vice Chancellor for Enrollment and Student Services. Except in cases involving the exercise of the power of summary suspension (see below), the sanctions of suspension or expulsion for disciplinary reasons shall be effective only after the administrative review by the Associate Vice Chancellor for Enrollment and Student Services has been exhausted or waived. The Associate Vice Chancellor for Enrollment and Student Services’ decision shall be in writing to the student(s) with a copy to the Student Discipline Committee. Copies of review procedures may be obtained from the Office of the Associate Vice Chancellor for Enrollment and Student Services.

SUMMARY SUSPENSION

Summary suspension is a suspension from the University which begins immediately upon notice from the appropriate University official without a formal hearing by the Student Discipline Committee. A hearing before the Student Discipline Committee is then scheduled as soon as possible (usually within seven calendar days) to determine the disposition of the case. Summary suspension may also include a physical exclusion from the campus if deemed necessary.

The Chancellor and/or a Vice Chancellor have the authority to suspend summarily any student when in their opinions such suspension is necessary to:
1. Maintain order on the campus.
2. Preserve the orderly functioning of the University.
3. Stop interference in any manner with the public or private rights of citizens on CU-Denver/Auraria owned or controlled property.
4. Stop actions that are threatening to the health or safety of any person.
5. Stop actions that are destroying or damaging property of the CU-Denver/Auraria campus, its students, faculty, staff, or guests.

PERMANENT RECORD NOTATIONS

While disciplinary proceedings are pending or contemplated, a temporary hold will be placed on the student’s academic record. It will not be released until all actions and appeal procedures have been completed or finalized by the University. Only in those cases where suspension, deferred suspension, or permanent expulsion results from disciplinary action will notations be placed on the academic record.

RELEASE OF DISCIPLINARY INFORMATION

Access to any student’s academic transcript or disciplinary file shall be governed by provisions of the Family Educational Rights and Privacy Act of 1974. Only the student charged or those University officials who have a legitimate educational interest in disciplinary information may have access to the files. All other inquiries including, but not limited to, employers, governmental agencies, news media, friends, or Denver Police...
must have a written release from the student to gain access to University disciplinary files.

Every effort will be made by the University to respect the privacy of the student. However, where the identity of the student has been publicly disclosed in the news media, the University reserves the right to respond as it deems appropriate to describe fairly and accurately the disposition of disciplinary matters.

**REFUND POLICY AFTER DISCIPLINARY ACTION**

Submission of registration materials obligates the student to pay the assessed tuition and fees for that term. If a student is suspended or expelled from the University, the amount of tuition/fees which would be refunded would be the same as when a student voluntarily withdraws from a term. See the General Information section of this catalog or the Schedule of Classes for more information.

The official withdrawal date applicable for tuition/fee refund purposes will be the date of the Student Discipline Committee’s decision. In the event that circumstances are such that the accused student has registered for a subsequent term before the final decision is made, that student does so at his/her own risk and may be liable for payment of tuition and fees for both terms. The Committee will make the decision as to whether official suspension or expulsion begins. Failure to make the required payment will result in the following action: students will become ineligible for all University services; no grades will be issued for courses in progress; no transcripts, diplomas, certification, or registration materials will be issued for the student until the bill is paid in full; a late fee charged in addition to the interest on the unpaid balance will be assessed.

**TRI-INSTITUTIONAL VIOLATIONS**

Procedures in deciding violations of the Code of Student Conduct involving students from other academic institutions on the Auraria campus have been developed by CU-Denver and the institution(s) involved. In such cases, the Director of Student Life should be contacted.

**Responsibilities of Computing Services Users**

Access to CU-Denver computing systems, and use of CU-Denver computing resources, is a privilege granted to members of the CU-Denver community for scholarly, research, and administrative purposes. Those who use computing services on the CU-Denver campus are expected to do so in an effective, efficient, ethical, and legal manner.

As a condition of using computer resources on the CU-Denver campus, users are expected to respect the intellectual effort and creativity of others, to respect the privacy of other users, to respect the integrity of the computer systems and other users' data, and to use computer resources in an efficient and productive manner.

It is the responsibility of all users to respect copyright protection of licensed computer software. Users do not have the right to copy licensed software programs or documentation without the specific permission of the copyright holder, or to use unauthorized copies of licensed software. Unauthorized use, duplication, or distribution of computer software is a violation of University policy and federal law. CU-Denver is connected to other universities and organizations through Bitnet and the Internet. Use of these networks is a privilege granted to all CU-Denver computer users. The networks must be utilized in an ethical and legal manner.

**Sexual Harassment**

The University of Colorado at Denver is a collegial academic community whose mission requires an open learning and working environment for students, faculty, staff, and administrators. An open learning and working environment values and protects individual dignity and the integrity of human relationships. CU-Denver’s 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, CU-Denver 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. Such behavior is reprehensible because it subverts the mission of CU-Denver, poisons the environment, and threatens the careers, educational experiences, and well-being of students, faculty, staff, and administrators.

It is a violation of CU-Denver’s Sexual Harassment Policy for anyone who is authorized to recommend or take action affecting faculty, staff, students, or administrators to make any unwelcome sexual advances, to request sexual favors, or to engage in any other verbal or physical conduct of a sexual nature when (1) sub-

mission to such conduct is made either explicitly or implicitly a term or condition of an individual’s employment or status in a course, program, or activity; or (2) submission to or rejection of such conduct is used as the basis for employment or educational decisions affecting that individual; or (3) such conduct has the purpose or effect of unreasonably interfering with an individual’s work performance or educational experience, or creates an intimidating, hostile, or offensive environment for working or learning.

For further information, contact the Sexual Harassment Officer, CU-Denver Bldg., Room 850, 556-4493.

**STUDENT SERVICES**

**Associate Vice Chancellor for Enrollment and Student Services:** Shelia Hood

**Student Life**

Students at CU-Denver reflect the diversity of its environment: many are older than those considered to be traditional college students; have employment and family responsibilities in addition to their academic programs; include substantial numbers of minorities, women, and single parents; and are most often enrolled part time.

To meet the needs of this diverse student population, CU-Denver provides student life programs and activities designed to complement students’ academic programs and to enhance their total educational experience. Students are provided opportunities to develop, experience, and participate in student government, social, cultural, intellectual, and recreational programs. Student life programs create an environment in which students are:

- Assisted in developing leadership through opportunities to practice decision making, management and marketing, interpersonal and group communication, and relationship skills.
- Encouraged and aided in developing social, cultural, intellectual, recreation and governance programs that expand involvement with the campus community and society and lead to mature appreciation of these pursuits.
- Encouraged to explore self-directed activities that provide opportunities for personal growth in individual and group settings.
- Exposed to various cultures and experiences, ideas and issues, art and musical forms, and styles of life.
Informed about institutional policies and procedures and how these are related to their lives and activities.

Aided in the awareness and utilization of campus facilities and other resources.

Assisted in developing community spirit through creative interaction among staff, faculty, students, and members of the local community. Students are encouraged to involve their families in campus events and activities.

Programs and services provided by the Associated Students of CU-Denver, the Division of Enrollment and Student Services of CU-Denver, and the Auraria Student Assistance Center Division contribute to the fulfillment of this philosophy.

**Clubs and Organizations**

ACM Computing Club

ACS Student Advisory Council

American Institute of Architecture Students

American Planning Association

American Society of Civil Engineers

American Society of Landscape Architecture

American Society of Mechanical Engineers

Anthropology Club

Association of Black Students

Auraria Transnational Student Association

Beta Alpha Omega (Counseling/Education)

Beta Gamma Sigma (Business Honor Society)

Chi Epsilon

Equipoonderance Pre-Law Club

Golden Key National Honor Society

Institute of Electrical and Electronics Engineers

Master of Social Sciences Club

M.E.C.H.A.

National Society of Black Students

Native American Student Organization

Philosophy Club

Pi Tau Sigma

Psi Chi (Psychology)

Russian Culture & Language Club

Sigma Tau Delta (English)

Sis Journal

Society of Accounting Students

Society of Women Engineers

Student Association of Musicians

Tau Beta Phi (Engineering)

Vietnamese Student Organization

**Associated Students of the University of Colorado at Denver (ASCU-DENVER)**

The Associated Students of the University of Colorado at Denver (ASCU-DENVER) serves as a voice for students and provides activities and services not normally offered to students under the formal University structure. ASCU-DENVER assists students with information concerning student clubs and organizations, campus events, issues concerning student status and other information of interest to students in general. ASCU-DENVER also provides students with assistance with grievances and with the opportunity to become more closely involved with the University community through active participation in student government itself or through service on University, tri-institutional, and AHEC committees. More information concerning services and activities can be obtained in the Student Government Offices, Student Union, Room 340, 556-2510.

**Student Legal Services**

Student legal services are available to assist students with off-campus legal problems through the provision of legal advice, litigation preparation, document interpretation, and assistance in negotiation. The service will not represent students in court. This student fee funded program is provided free of charge to CU-Denver students; however, a charge may be assessed for actual costs incurred such as copying, typing, etc. Contact the office for further details at 620-4828, CU Administration Building, Suite 130.

**The Advocate**

The purpose of the student newspaper is to provide students with information about campus issues and events. The newspaper strives to include good investigative reporting, feature articles, and items of general interest to its campus readership. In addition, the newspaper is a tool to encourage and develop writers, journalists, artists, and other student members of its general management and production staff. The office is in the Student Union, Room 153, 556-8321.

**Office of Student Life**

The Office of Student Life is the advising, coordinating, resource, and general information center for student clubs and organizations, student government (ASCU-DENVER), student programs, and the academic honor societies. Student Life coordinates new student orientation programs. The office is responsible for the administration of the student fee budget and monitors all student fee expenditures to assure compliance with CU-Denver and the state of Colorado regulations and procedures. The Director of Student Life represents the Associate Vice Chancellor for Enrollment and Student Services on selected CU-Denver, tri-institutional, and AHEC committees and maintains effective lines of communication with MSC, CCD, and AHEC. The director administers the student conduct and discipline procedure as described in the Code of Student Conduct. The Office of Student Life is located in the Student Union, Room 255, 556-3399.

**Office of Veterans Affairs**

The Office of Veterans Affairs (OVA) is an initial contact point for eligible veteran and dependent students attending CU-Denver utilizing Veterans Administration educational benefits. This office assists students with filling out VA paperwork and in solving problems associated with receiving VA-related benefits.

The OVA maintains proper certification for eligible students to ensure that each student meets Veterans Administration requirements for attendance, course load and content, and other regulations necessary to receive educational benefits payments.

In addition, the OVA provides VA Vocational Rehabilitation referrals, and information on VA training assistance, and VA work/study positions for qualified veterans. For further information, contact the Office of Veterans Affairs at 556-2630, CU Administration Building, Suite 130.

**Student Counseling, Testing, and Career Services**

**Phone:**

Counseling: 556-2815

Testing: 556-2861

Career: 556-3477

**Office:**

Counseling: NC2013

Testing: NC 2204

Career: Arts 177

Student Counseling, Testing, and Career Services provides a variety of support programs and services to CU-Denver students. Our mission is to help students grow in self understanding, to help make their college years a satisfying and productive experience, and to facilitate meaningful preparation for future goals. Our offerings include the following:
Counseling Services. Students may obtain short term personal counseling provided by professional staff. We also will assist students and others in locating appropriate counseling/mental health services in the community. The office also sponsors professionally facilitated counseling groups. For more information, call 556-2815. The office is located in NC 2013.

Programs and Workshops. The office sponsors a variety of FREE or low-cost programs and workshops on a variety of topics such as assertiveness training, stress management, college survival skills, drug and alcohol awareness, etc. Also offered is PREP (Prevention and Relationship Enhancement Program), an intensive communications workshop for couples. These programs are open to the entire CU-Denver community. Call 556-2815.

Career Development Services. The office provides individual career counseling, career development and employment workshops, and career testing to CU-Denver students and alumni. Career tests offered include the Strong Interest Inventory, Myers-Briggs Type Indicator, and The Values Scale. The office also sponsors a variety of career placement services, including on-campus interviewing, and an extensive career resource library. For more information on career services, call 556-3477. The office is located in Arts 177.

Women's Programs and Services. Offerings in this area include: advocacy, programs such as Self Defense for Women, and Dealing with Sexual Harassment; scholarship offerings; and referral/resource information. Call 556-2815.

Re-Entry Program. The Center offers an intensive one-day program each semester which is geared to assisting the returning adult student as he or she makes the transition to university life. Call 556-2815.

Student Employment Experience Program. This program provides basic employment training for all new college work-study student employees. For more information, call 556-2815.

Testing Services. The Testing Center provides testing for all levels of postsecondary education, and professional certification. Tests offered include:

- ACT American College Test
- CAT California Achievement Test
- GRE Graduate Record Examination
- GMAT Graduate Management Admissions Test
- GSFLT Graduate School Foreign Language Test
- MAT Miller Analog Test
- MCAT Medical College Admission Test
- TOEFL Test of English as a Foreign Language
- CLEP College Level Examination Program

For further information on Testing Services, call 556-2861. The office is located in NC 2204.

Office of Student Retention Services

The Office of Student Retention Services offers an array of services and programs designed to foster cultural diversity within the CU-Denver student body, help students adjust to the social and intellectual environment of the campus, and provide the academic support students need to succeed in their studies and derive maximum benefit from their college experience. Outreach and retention services are provided by professional staff in four centers. These include the Center for First-Year Students, Center for Learning Assistance, Center for Educational Opportunity and Cultural Diversity, and the Center for Pre-Collegiate Development. The Office of Student Retention Services is located in NC 2012, 556-2324.

CENTER FOR FIRST-YEAR STUDENTS

The Center for First-Year Students offers individualized support services to help freshman students adjust to college life and succeed in their college studies. Personal advisors in the Center provide orientation to the campus and its programs, assist students in interpreting academic policies and requirements, assist in the selection of classes and academic programs commensurate with students' educational and career interests, refer students to other campus resources, and provide advocacy, if necessary. The Center is located in NC 2012, 556-2546.

CENTER FOR EDUCATIONAL OPPORTUNITY AND CULTURAL DIVERSITY

The Center for Educational Opportunity and Cultural Diversity provides access and educational opportunities to ethnic minority students through services conducive to the student's retention and graduation. The Center houses four distinct programs, each of which provides academic advising, scholarship information, cultural programs, advocacy, and other support services tailored to the specific needs of their students. The Center is located in NC 2012, 556-2324.

American Indian Student Services Program
Asian American Student Services Program
Black Student Services Program
Hispanic Student Services Program

CENTER FOR PRE-COLLEGIATE DEVELOPMENT

Programs offered by the Center serve to motivate minority high school students to pursue post-secondary education and provide them the academic skills needed to be successful in their college endeavors. The Center is located in NC 2014, 556-2322.

Pre-Collegiate Development Program.

This program enables students in grades 9 through 12 to engage in a wide range of university activities throughout the academic year and during a Full-time, five-week summer program. The academic year component offers monthly study skills and career orientation workshops, advising, tutoring, and a variety of cultural enrichment experiences. The five-week summer session for students in the 9th through 11th grades consists of accelerated classes for which students receive elective high school credit, career orientation, and engage in cultural activities.

CU-Denver Minority Scholars Program. The MSP is an early college enrollment program for college bound, high achieving minority students who are enrolled in their junior year of high school. The program enables students to begin their college studies by taking one course at CU-Denver during the fall term during their senior year in high school. The credit earned in the course can be applied toward a bachelor's degree. While enrolled in the program, students participate in monthly workshops designed to acclimate them to the University and prepare them for college study.

CENTER FOR LEARNING ASSISTANCE

The Center for Learning Assistance is designed to promote student success in the academic setting. Services are available to all CU-Denver students. The Center's services include tutoring, workshops, academic and institutional credit courses, consulting, and a minority resource library. First-generation college students may be eligible for more intensive services through the Student Support Services component of the Center. The Center is located in NC 2006, 556-2802.

Tutoring. Free tutoring is available in many subject areas (some limitations apply). Scheduled sessions are held on weekdays/evenings. Scheduled and
open lab (walk-in) tutoring are available at established times throughout each term (M-R, 8 am – 9 pm & F, 8 am – 5 pm and M–R, 9 am – 7 pm & F, 9 am – 5 pm respectively).

Workshops. Study skills workshops are provided on such topics as test-taking, memory and study techniques, notetaking, listening and time management.

Consulting. Academic, financial aid, and personal consulting are available. Peer advocacy is available to students eligible for the Student Support Services Program.

Library. The Center maintains a small periodical and book collection authored by, and/or about, minorities; these resources are available for student research and leisure.

Courses. Courses are offered in a small group format in the areas of college survival skills, computer word processing, English as a second language, and problem solving.

ENGL 1006-3. Reading for Speakers of Other Languages. This course is designed for ESL students who need to improve their reading and vocabulary skills. Students will increase their reading ability through vocabulary building, work attack strategies, and reading analysis.

ENGL 1007-3. Composition for Speakers of Other Languages I. This is the first course in the ESL composition sequence. Writing begins with sentence-level development and continues with the development of paragraphs based on western rhetorical patterns. Grammar appropriate to students' needs will be incorporated into the class.

ENGL 1008-3. Composition for Speakers of Other Languages II. Continued work on grammar, syntax, and the mechanics of writing. Writing begins with paragraphs and moves into essay writing. Prereq: ENGL 1007 or coordinator's approval.

ENGL 1009-3. Advanced ESL Writing Skills. This is the third course in the ESL composition sequence. Emphasis is placed on more complex grammatical problems and on the development of longer compositions. Prereq: ENGL 1008 or CMMU 1420 or coordinator's approval.

STSK 0705-1. Problem Solving. This course is designed to improve investigative and problem solving skills. Scientific theory, empirical methodology, and research methods will be utilized. Individual topics of investigation will be assigned.

STSK 0707-1. College Survival Skills. This course is designed to promote success in the academic setting. Topics covered will include university resources, conquering the university system, listening and notetaking, study and memory techniques, test-taking skills, time management, library research strategies, and word processing.

STSK 0708-1. Introduction to Word Processing. This course will thoroughly familiarize the student with an easy-to-use word processing program that will assist in the process of writing text revision and rearrangement, and the production of "letter-perfect" documents. (The word processing program used will be one that is available in the open student-use computer lab areas.)

STSK 0800-1. Advanced ESL Grammar/Composition. This class meets for two hours a week. It is designed for students who do not feel competent with their English composition skills. This class is highly individualized in order to focus on those grammar and writing structures that pose particular problems for ESL students.

STSK 0801-1. Communication Skills for ESL Students. This course meets twice a week to improve the oral communication skills of students whose first language is not English. Skills include use of idiomatic English, cross-cultural awareness, cross-cultural problems in communications, and pronunciation.

STSK 0802-1. Improving Academic Reading Skills for ESL Students. This class meets twice a week. The aim of the class is to improve the student's ability to read academic texts. Skills practiced include skimming/scanning, reading for the main idea, and critical reading.

STSK 0806-1. Study Skills for ESL Students. This class is designed for ESL students to improve those skills needed for effective participation in the college classroom. Emphasis will be on academic reading and writing skills, as well as on notetaking skills.

STSK 0810-3. Topics. Special topics in study skills to be selected by instructor.

STSK 0820-1. Social Science Partnership for ESL. This class is designed to provide a basic understanding of American culture and its underlying values. Students will develop critical thinking skills as well as have opportunities for additional practice in reading and writing skills to include vocabulary in social science areas (i.e., sociology, history, political science, economics, psychology).

CENTER FOR INTERNSHIPS AND COOPERATIVE EDUCATION

Director: Janet Michalski
Assistant Director and Coordinator, Engineering: Diane Berkley

Coordinator, Liberal Arts and Sciences: Cherrie Grove
Coordinator, Business and Administration: Wayne Sundell
Senior Secretary: Charlene Michael
Office: 1047 Ninth Street
Historic Park
Telephone: 556-2892

The Center for Internships and Cooperative Education, established at CU-Denver in 1973, provides students with an opportunity to supplement their academic classroom learning with on-the-job work experiences, internships, or community service opportunities related to their academic studies. Students are placed either as paid co-op trainees or as interns for academic credit with corporations, businesses, or government agencies in the Denver metropolitan area as well as out of state. Short-term community service experiences also are available for students enrolled in courses requiring some community service.

Faculty coordinators from each of the University's colleges and schools act as liaisons between the Center and the academic departments. The Center currently places some 500 students each year with some 250 participating employers. Over 30 percent of all students placed are graduate students.

Cooperative Education

Cooperative education is an educational method which combines classroom study with paid, career related, off-campus work. The purpose is to give students the opportunity to apply what they have learned in the classroom to real world situations, and to bring that experience back to the classroom as a learning tool.

Cooperative education offers students paid long-term positions (two or more semesters). Students alternate semesters of full-time work with semesters of full-time school, or work part time year round. Co-op experiences may be eligible for academic credit, and many positions lead to permanent career positions upon graduation.

Internships

Internships offer students short-term positions (one semester) and they are often nonpaid. Internships are always done for academic credit and are popular with students who like to explore a variety of careers. Many students complete two, three, or even four internships before graduation. Internships, like co-op jobs,
are related to the student's academic studies and/or career goals.

CU-SERVES/Service Learning

CU-Denver's new community service/service learning program, CU-SERVES, was established in 1991 to develop community service opportunities for any CU-Denver course that incorporates a community service option or requirement. CU-SERVES also sponsors 2-3 service days throughout the year which attract 100+ CU-Denver students, faculty, staff and alumni who join together to provide volunteer service to Denver's needy communities.

Student Eligibility

To qualify for placement in a co-op or internship position students must be enrolled at least half time in any CU-Denver college or school, have completed their freshman year, have maintained a grade-point average of 2.5 or higher, and have completed at least 12 hours in residence (6 hours for graduate students). Some employers have additional requirements, i.e., U.S. citizenship, willingness to travel, and specific course work.

Participation in any CU-SERVES service day is open to all students. Participation in a service learning placement requires enrollment in a course with a service option or requirement.

Academic Credit for Work Experience

Undergraduate students placed by the Center in paid or non-paid positions, as well as students who have obtained their own positions, can apply to earn academic credit through courses in the College of Liberal Arts and Sciences, and the College of Engineering and Applied Science. Graduate students in the College of Liberal Arts and Sciences, School of Education, Graduate School of Public Affairs, and School of Architecture and Planning can earn internship, experiential learning, field study, or practicum credit through courses established for this purpose.

Why Students Participate

• Students recognize the value of combining theory with practice and find greater relevance in their studies.
• Work experience allows students to test classroom teaching in the laboratory of the real world.

• The program teaches students valuable job-search skills such as resume writing and interviewing techniques.
• Co-op positions provide a means of financial assistance that is available to all students, regardless of family income levels or other financial aid arrangements, and does not leave students burdened with educational debts.
• The inclusion of a work component and the contribution from co-op earnings are major factors in encouraging first-generation college students to pursue a college degree.

Why Employers Participate

• Students are an excellent resource for special projects and peak loads or busy seasons.
• The employer can assess an individual's potential for employment after graduation, thus saving entry-level recruiting costs.
• Student workers can increase productivity of full-time professional staff.
• Students are highly motivated, productive, and dependable workers.
• Students bring knowledge about the latest academic research to their employers.
• As verified by many studies, co-op student interns subsequently become full-time employees with far lower turnover rates and better promotion potential than the average entry level professional.

Facts About Cooperative Education

• Cooperative education programs have been established in over 80 percent of the Fortune 500 corporations. All of the top 10 Fortune 500 companies are involved in cooperative education.
• The last three presidents of General Motors at one time were cooperative education students.
• Cooperative education has been conducted successfully in the U.S. since 1906.
• Over 1,000 colleges and universities currently have cooperative education programs.
• An estimated 200,000 college students are enrolled in cooperative education and gross annual earnings are calculated to be in excess of $200,000,000.

Typical Participating Employers

Employers who recruit CU-Denver students for cooperative education positions include:

- Amoco Production Company
- Bloombury Review
- City of Denver, Mayor's Office of Art, Culture & Film
- Colorado Association of Commerce and Industry
- Colorado Association of Public Emploee
- Colorado Housing & Finance Authority
- Denver Center for the Performing Arts
- Denver City Attorney, Domestic Violence Unit
- Denver General Hospital
- E&G
- Environmental Protection Agency
- Federal Highway Administration
- Hughes Aircraft Company
- IBM Corporation
- KCNC-TV
- Los Angeles Times
- MacNeil/Lehrer Newshour
- National Renewable Energy Laboratory
- Office of the Governor, State of Colorado
- Peat Marwick Main & Co.
- U.S. WEST Communications
- U.S. Bureau of Land Management
- U.S. Bureau of Reclamation
- U.S. General Accounting Office
- Walt Disney World, Inc.
- Walters & Theis Law Firm
- Western Area Power Administration

LIBRARY SERVICES

Auraria Library

Dean and Director: Camila Alire
Associate Directors: Jean F. Hemphill, Glenda A. Thornton
Office: Auraria Library, Lawrence at 11th Street
Telephone: Administration: 556-2805
Telephone: Information: 556-2741

Faculty:

Associate Professors: Camila Alire, Robert F. Hemphill
Assistant Professors: Dene L. Clark, Glenda Thornton, Linda D. Tietjen, Diane Turner, Liz Willis, Eveline L. Yang

FRIENDS OF AURARIA LIBRARY

The Friends of Auraria Library is an association formed in 1976 to promote the development of Auraria Library as a center for learning, study, and research for the students and faculty of the University of Colorado at Denver, Metropolitan State College of Denver, and the Community College of Denver. The Friends of Auraria Library’s ongoing objectives are:

To promote awareness of and good will toward Auraria Library on the campus, in the metropolitan area, and in the region.

To increase Library resources through contributions, solicitations, grants, bequests, and gifts of books and other appropriate materials.

LIBRARY SERVICES

Access to information is essential to academic success. The Auraria Library, located at the center of the campus, provides a wide range of learning resources and services to support academic programs. The Library is administered by the University of Colorado at Denver.

THE COLLECTION

The Auraria Library has a collection of approximately 600,000 volumes. In addition to a strong, up-to-date book collection, the Library also has over 2,000 journal and newspaper subscriptions and a film/videotape collection. The Library is a select depository for U.S. government publications and a depository for Colorado state documents. The Auraria Library’s collection is supplemented by providing access to other libraries within the state and nationally through interlibrary loan services.

THE CARL ONLINE PUBLIC ACCESS CATALOG

Access to the Auraria Library’s collection is through the online CARL (Colorado Alliance of Research Libraries) public access catalog, a user-friendly system that also allows for searching of the collections of many other libraries throughout the state, the region, and the nation. The CARL system has received national recognition for being on the cutting edge of information technology. The system allows faster and more comprehensive searches than were possible with the traditional card catalog. Through its UnCover project it also offers current indexing to over 10,000 periodical titles. In addition to using CARL at the Library, patrons may obtain dial-up access through a home or office computer with a modem; CARL also appears as a menu item on the CU-Denver mainframe computer.

CIRCULATION SERVICES

Library materials are checked out from the Circulation Desk with a current Auraria I.D. or other valid identification. Undergraduate students may check books out for 28 days and graduate students for 60 days. An Auraria student with a valid student I.D. can check out up to 75 books from the general collection. Renewals may be made in person or by phone (556-2639). Charges are assessed when books are returned past their due date.

REFERENCE SERVICES

The Auraria Library Reference Department strives to provide excellent service in assisting students and faculty with their research needs. The Reference Desk is staffed during most hours the Library is open. Additionally, an Information Desk is staffed during peak hours to assist patrons with general information and to direct them to the appropriate service desks. Telephone reference is provided for quick questions such as, “Does the Auraria Library own a particular book?”

COMPUTER ASSISTED RESEARCH (CAR)

Online database searching, for which there is a fee, can save many hours of researching printed abstracts and indexes. In some cases, it provides the only access to certain materials. The Library has access to well over 200 databases. In addition to bibliographic information, databases also may contain directory and financial information, scientific data, and full text. Questions about the Computer Assisted Research service should be directed to the CAR manager, 556-3464.

INTERLIBRARY LOAN (ILL)

ILL links the Auraria Library to libraries worldwide by providing access to needed materials otherwise unavailable locally. Materials, once requested, can take from one to three weeks for in-state borrowing or three weeks or longer for out-of-state borrowing. A fee may be required in order to obtain journal articles or books. Request forms are available in the library or through the CU-Denver Computing Services VAX 8800 system. Contact the Interlibrary Loan Department Office at 556-2562 for additional information.

LIBRARY INSTRUCTION

The Library is committed to providing information skills through its instruction program. The program is varied, ranging from basic, introductory level material to advanced research methodology for graduate students. For more information about the Library's instructional offerings, contact the Library Instruction office at 556-3303.

RESERVES

The Reserves Department provides special short-term circulation of books, pamphlets, articles and other materials needed for class instruction. The loan periods are short and overdue follow-up is prompt so that large numbers of students can have access to the material. These materials include not only titles owned by the Library but also personal copies made available by the faculty. The Reserves Department is located at the Circulation Desk. Material will be checked out to Auraria students with an appropriate I.D.

ARCHITECTURE AND PLANNING LIBRARY

The Library’s main collection is supplemented by the material housed at the nearby Architecture and Planning Library. With a collection of over 20,000 books, 90 periodical subscriptions, and 25,000 slides, this library offers specialized information to students of architecture, landscape architecture, urban design, and urban and regional planning. The library is open to any student who needs access to these materials.

SERVICES FOR PERSONS WITH DISABILITIES

The Library is committed to making its resources and services available to all students. Through the Media Distribution Department, a wide variety of adaptive equipment is available to assist persons with disabilities including a Kurzweil Reading Machine, a Voyager VTEK magnifier, a Braille dictionary, the World Book Encyclopedia in Braille and on cassette, and the Perkins Brailleier. Several large print dictionaries are in Reference. Library services to assist persons with disabilities include orientation to the physical layout of the Library, retrieval of materials, and assistance with use of CARL, the online public access catalog, periodicals, indexes, and special adaptive equipment.
ADDITIONAL FACILITIES

Coin-operated typewriters, photocopiers, microform reader/printers, a copy center, a change machine, pay phones, and study rooms are all available at the Library.

INTERNSHIPS

The Library offers internships, practicums, independent studies, and volunteer opportunities to students interested in librarianship and information management.

MEDIA SERVICES

Auraria Media Center
Muriel E. Woods, Director

The Auraria Media Center offers a full range of media services including the management of the Library’s film and videotape collection. These materials are listed in the online public access catalog. The Media Center operates a 24 channel television distribution system which is wired into all classrooms on campus; faculty members may request the transmission of a film or videotape directly into the classroom over this system. Students may request transmission of a film or videotape from one of the media viewing and listening carrels in the Library. This system also can transmit live programs from St. Cajetan’s, the Student Union, and the Media Center’s television studios to other locations on campus. A self-service graphics lab and a self-service VHS editing suite also are available for student use in the Media Center’s Production Department. Finally, an Internship Program is available to students who are interested in converting knowledge gained in electronics and/or television production courses to practical experience.
The Graduate School

Acting Dean: Fernie Baca
Office: CU-Denver Bldg. (formerly Dravo), Room 710
Telephone: 556-2663

INFORMATION ABOUT THE SCHOOL

Quality graduate programs are synonymous with the University of Colorado. Professors are actively involved in research or creative activity and, as teacher/scholars, continue to study and absorb new data, ideas, and techniques, eventually bringing these experiences to the classroom. Graduate students at CU-Denver gain not only from interactions with the graduate faculty, but also from other students in the classroom. Because most of CU-Denver’s graduate students are older and employed, they bring practical experience gained in the Denver community to the classroom and are ready to relate the realities of practice to the models presented in the classroom.

The Graduate School is a University-wide body that authorizes programs within its constituent colleges and schools. At CU-Denver, Education, Engineering, and Liberal Arts and Sciences are colleges or schools whose graduate programs are offered through The Graduate School. In concept, there is a single Graduate School regardless of campus. In practice, most masters-level programs are specific to the campus where the student is admitted, insofar as particular options and advisors are concerned.

Doctoral-level programs in a discipline are viewed as the responsibility of the entire University community of that discipline. Doctoral-level programs on the CU-Denver campus are coordinated either through the office of the system graduate dean or through the corresponding Denver or Boulder department. There are several doctoral-level degree programs offered through CU-Denver.

Degrees Offered

The following graduate programs are authorized for completion through The Graduate School at CU-Denver.

The Master of Arts (M.A.) in:
- Anthropology
- Biology
- Communication and Theatre
- Economics
- English
- History
- Political Science
- Psychology
- Sociology

The Master of Arts (M.A. Education) in:
- Administration, Supervision and Curriculum Development
- Counseling and Guidance
- Early Childhood Education
- Education Instruction and Curriculum
- Educational Psychology
- Special Education

The Master of Science (M.S.) in:
- Applied Mathematics
- Chemistry
- Civil Engineering
- Computer Science
- Electrical Engineering
- Environmental Science
- Mechanical Engineering
- Technical Communication

The Master of Basic Science (M.B.S.)

The Master of Engineering (M.E.)

The Master of Humanities (M.H.)

The Master of Social Science (M.S.S.)

The Specialist in Education (Ed.S.)

The Doctor of Philosophy (Ph.D.) in:
- Applied Mathematics
- Administration, Supervision and Curriculum Development
- Public Administration

Course work is available at the Denver campus in the programs listed below. Student residents on the Denver campus studying in these areas may take advantage of the multi-campus activities of The Graduate School.

- Biology
- Chemistry
- Civil Engineering
- Communication
- Computer Science
- Electrical Engineering
- English
- Mechanical Engineering
- Psychology

'Awarded through CU-Boulder

The Graduate School at CU-Denver

An average of 4,839 students are enrolled in graduate programs at CU-Denver each fall and spring semester, which includes 1,057 non-degree students taking graduate courses. Approximately 74 percent of enrolled graduate students are part-time students.

Computing Services

The Computing Services department supports computer use by both the academic and administrative communities at CU-Denver. For a complete description of services offered see Special Programs and Facilities in the General Information section of this catalog.

Financial Aid for Graduate Study

COLORADO GRADUATE GRANT

The Colorado Graduate Grant is administered by The Office of Financial Aid. Competition for these funds is based on demonstrated need and is open to graduate students who are residents of the State of Colorado. Grant awards are announced each semester for the following term. Applications are available from the Office of Financial Aid.

COLORADO GRADUATE FELLOWSHIPS

Colorado Graduate Fellowships are awarded primarily to entering and continuing regular degree doctoral students. These are awarded to entering students on the basis of academic promise and to continuing students on the basis of academic success.

GRADUATE STUDENT TEACHING APPOINTMENTS

Many departments employ graduate students as part-time instructors or teaching assistants. The instructorship is reserved for those advanced graduate...
students already possessing an appropriate M.A. degree who may be independently responsible for the conduct of a section or course.

A half-time appointment for an instructor is considered to be equal to 6 class contact hours; a half-time teaching assistant is appointed for 20 hours per week. Compensation is based on the number of hours per week. Teaching assistants and instructors must be enrolled as full-time students (registered for at least 5 credit hours of mixed undergraduate/graduate/thesis or dissertation) in good standing for the full period of their appointment.

**RESEARCH ASSISTANTSHIPS**

Research activities provide opportunities for graduate students to obtain part-time work as research assistants in many departments. Assistants must be enrolled as full-time students (registered for at least 5 credit hours of mixed undergraduate/graduate/thesis or dissertation).

**LOAN FUNDS**

Graduate students wishing to apply for long-term loans and for part-time jobs through the college workstudy program should submit an Application for Financial Aid to the Office of Financial Aid by March 1. This office also provides short-term loan assistance to students who have completed one or more semesters in residence. Short-term loans are designed to supplement inadequate personal funds and to provide for emergencies. Application should be made directly to the Office of Financial Aid.

**EMPLOYMENT OPPORTUNITIES**

The University maintains an employment service in the Office of Financial Aid to help students obtain part-time work either through conventional employment or through the college workstudy program. Students employed by the University are hired solely on the basis of merit and fitness, a policy which avoids favor or discrimination because of race, color, creed, sex, age, handicap, or national origin. Students are also referred to prospective employers in accordance with this policy.

**International Education**

The Office of International Education expedites the exchange of students and faculty, entertains foreign visitors, promotes special relationships with foreign universities, and acts as advisor for the Fulbright and other student fellowships.

The office also arranges study abroad programs. Students remain enrolled at the University of Colorado while taking regular courses in the foreign universities. A B average with the equivalent of two years of college-level work in the appropriate language is required. There also are occasional summer programs offering academic credit.

Peace Corps information may be obtained from the Office of International Education.

For additional information contact the office of International Admissions and Student Services at 556-2659 or the Office of International Education at 556-3489.

**REQUIREMENTS FOR ADMISSION**

**General Requirements**

Students may be admitted to The Graduate School in either of the two categories described below.

**REGULAR DEGREE STUDENTS**

Qualified students are admitted to regular degree status by the appropriate department. In addition to departmental approval, applicants for admission as regular degree students must:

1. Hold a baccalaureate degree from a college or university of recognized standing, or have work experience equivalent to that required for such a degree and equivalent to the degree given at this university.
2. Show promise of ability to pursue advanced study and research, as judged by their previous scholastic record.
3. Have adequate preparation to enter graduate study in the field chosen.
4. Have at least a 2.75 undergraduate grade-point average on all work taken.
5. Meet additional requirements for admission as established by major departments.

Regular degree students must maintain at least a 3.0 grade-point average each semester or summer term on all work taken, whether it is to be applied toward the intended advanced degree or not. Students who fail to maintain this standard of performance will be subject to suspension from The Graduate School.

**PROVISIONAL DEGREE STUDENTS**

Applicants who do not meet the requirements for admission as regular degree students may be admitted as provisional degree students upon the recommendation of the major department. Upon the recommendation of the Admissions Committee and concurrence of the dean of The Graduate School, a department may admit provisional students for a probationary term which may not exceed two consecutive calendar years. At the end of the probationary period, provisional degree students must either be admitted to regular degree status or be dropped from the graduate program.

Credit earned by persons in provisional degree status may count toward a degree at this University.

Provisional degree students are required to maintain a 3.0 grade-point average or higher, according to the terms of their provisional admission, each semester or summer term on all work taken, whether or not it is to be applied toward the advanced degree sought. Students who fail to maintain such a standard of performance will be subject to suspension from The Graduate School.

Note: All provisional applicants must have completed a minimum of six semester hours of graduate-level course work or must take the Graduate Record Examination and submit scores as part of the application.

The University reserves the right to deny admission to applicants whose total credentials reflect an inability to assume the standards of performance and behavior deemed essential by the University and relevant to any of its lawful missions, processes, and functions as an educational institution.

**SENIORS AT THE UNIVERSITY OF COLORADO**

A senior at this University who has satisfied the undergraduate residence requirements, and who needs not more than 6 semester hours of advanced subject and 12 credit points to meet the requirements for a bachelor's degree, may be admitted to The Graduate School by special permission of the dean.

A University of Colorado senior enrolled in the College of Engineering and Applied Science who needs not more than 18 semester hours or 36 credit points to meet the requirements for a bachelor's degree may be admitted to The Graduate School, but is not eligible for financial aid, scholarships, or fellowships as a graduate student until the equivalent of the minimum requirements for the bachelor's degree have been satisfied.
Application Procedures

Graduate students who expect to study at CU-Denver should contact the Office of Admissions concerning procedures for forwarding completed applications. An applicant for admission must present a completed Application Form (Parts I and II), which may be obtained from the Office of Admissions, and two official transcripts from each institution attended. The application must be accompanied by a nonrefundable application fee of $30 (check or money order) when the application is submitted. No application will be processed unless this fee is paid. Many departments require scores from the Graduate Record Examination, and all departments require three or four letters of recommendation.

When a prospective degree student applies for admission, the chairperson of each department or a student admissions committee shall decide whether the applicant shall be admitted and shall make that decision known to the Office of Admissions, which will inform the student. Persons not wishing to work toward an advanced degree are referred to as non-degree students (see Non-degree Students in this section).

A completed application must be in the office of the major department at least 90 days prior to the term for which admission is sought or earlier as may be required by the major department.

Students who wish to apply for a graduate student award for the academic year 1993-94, e.g., fellowship, scholarship, assistantship, must file a completed application with the department before the announced departmental deadline.

RE-ADMISSION OF FORMER AND SUSPENDED STUDENTS

Students who were previously admitted to a graduate degree program but did not complete that degree program and have not been registered for one year or more at the University must:

1. Clarify their status with the department or school/college to determine their eligibility to return and pursue the same degree.
2. After receiving departmental approval as indicated above, submit a new application Part I to the Office of Admissions before departmental deadlines are passed for the term in which they expect to return to the University. A $30 application fee is required. Application deadlines are available from the department.

Former students who wish to change from undergraduate to graduate status or from one major to another must apply to the new department.

Students transferring from one campus to another must apply and be accepted to the new campus.

A student admitted to The Graduate School for the master's program must reapply for the doctoral program.

A suspended student is eligible to apply for readmission after one year. Approval or rejection of this application rests jointly with the student's major department and the school/college dean. In case of lack of agreement between the department and the dean or in the case of appeal by the student, the final decision will be made by the Graduate Council.

FOREIGN APPLICANTS

Prospective foreign students should have completed applications on file in the Office of Admissions prior to December 1 for the Summer Term, March 1 for the Fall Semester, and July 1 for the Spring Semester. The application packet should include the $50 fee, TOEFL scores, financial documentation, Graduate Record Examination scores, official English translation of all school records, and other documents as noted in the previous section on Application Procedures.

Acceptable TOEFL Scores. The TOEFL is the Test of English as a Foreign Language. If your native language is not English, or if you have not attended a British or American university for at least one year and achieved satisfactory grades, then you must take the TOEFL. All programs within CU-Denver's Graduate School - arts and sciences, education, engineering, and doctoral programs - require a minimum score of 525 or regular admission. Those earning less than 525 will normally be referred to the Spring International Language Center (on campus) for further language study. During that time, students will study on an I-20 from Spring International, but may take classes as non-degree students at CU-Denver. They may subsequently be granted regular admission to The Graduate School. All international students who take the TOEFL and are granted regular admission to CU-Denver's Graduate School will be asked to take both the Michigan and SPEAK tests during their first semester of study. Those whose TOEFL fell between 525 and 550 will be required to take additional language training in light of whatever deficiencies may be revealed by these diagnostic tests. Those whose TOEFL exceeds 550 will be encouraged, but not required, to undergo additional training in light of their performance on these tests. Students seeking admission to all other graduate programs, including those in architecture and planning, business, and public affairs, should consult those program descriptions for language requirements.

GRADUATE RECORD EXAMINATIONS

At the option of any department, the Graduate Record Examination may be required of applicants for admission to the graduate program or for assistantships prior to determining student status. Students who are applying for assistantships for the fall semester take the GRE no later than the December testing date so that their scores will be available to the selection committee. Six weeks should be allowed for GRE scores to be received by an institution.

Information regarding these examinations may be obtained from the CU-Denver Testing Center, or the Educational Testing Service, Box 1502, Berkeley, California 94701, or Box 955, Princeton, New Jersey 08540.

OTHER GRADUATE QUALIFYING EXAMINATIONS

Students entering professional schools and special programs may obtain information at the Student Testing Center on the following examinations: Graduate Management Admissions Test (GMAT), Graduate Record Examination (GRE), Miller Analogies Test (MAT), Dopllet, and Law School Admissions Test (LSAT).

NON-DEGREE STUDENTS

A student not wishing to earn an advanced degree from the University of Colorado at Denver should apply to the Office of Admissions, Campus Box 167, P.O. Box 173364, Denver, CO 80217-3364. Non-degree students will be allowed to register only on the campus to which they have been admitted.

Non-degree students desiring to pursue a graduate degree program at this University are encouraged to submit the complete graduate application and supporting credentials as soon as possible.

A department may recommend to the graduate dean the acceptance of as many as 9 credit hours toward the requirements of a master's degree for courses taken either as a student at another recognized graduate school, as a non-degree student at the University of Colorado, or both. In addition, the department may recommend to the graduate dean the acceptance...
of credit courses taken as a non-degree student at this University during the term for which the student applied for admission to The Graduate School, provided such admission date was delayed through no fault of the student. A grade of B or better must be obtained in any coursework transferred in this manner.

REGISTRATION

Course Work and Examinations

On the regular registration days of each semester, students who have been admitted to The Graduate School and who expect to study in The Graduate School are required to complete appropriate registration procedures.

Students should register for classes the semester they are accepted into The Graduate School. If unable to attend that semester, they must notify the department that has accepted them and submit the necessary forms to the Office of Admissions and Records at CU-Denver in order to attend the following semester.

Changes in Registration

A student who wishes to drop a course or take it for no credit should follow the drop/add standard procedure (see current Schedule of Classes). After the tenth week of classes graduate students may not drop, add, or change a course to no-credit status without presenting a letter to the dean of their school/college, stating the exceptional circumstances that justify the change. This letter, endorsed by the instructor of the course, must accompany the properly signed and completed drop/add card or no-credit option form.

Withdrawal

Graduate students who desire to withdraw from the University must apply to the dean of their school/college for permission to withdraw in good standing. A student who discontinues attendance in a course without official withdrawal will be marked as having failed the course. The withdrawal form must be signed by the instructor of the course and pass/fail must be indicated with the instructor's initials.

Master's Thesis

Graduate students working toward master's degrees, if they expect to present a thesis in partial fulfillment of the requirements for the degree, must register for thesis for a minimum of 4 semester hours or a maximum of 6 semester hours. 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. (The student may not register again for any portion of thesis credit on which an IP grade has been submitted.)

Limitation of Registration

FULL LOAD

A graduate student will be considered to be carrying a full load during a regular semester for purposes of determining residence credit if the student is registered for at least 5 credit hours of mixed undergraduate/graduate/thesis or dissertation hours.

A maximum of two-thirds of a semester of resident credit may be earned during the summer if a student registers for three semester hours of other graduate work or any number of thesis hours.

For the number of hours required for financial aid, see Financial Aid at the University of Colorado at Denver in the General Information section of this catalog. A graduate student may contact the school/college dean's office for information on the appeal process regarding the full load requirement for financial aid purposes.

MAXIMUM LOAD

No graduate student may receive 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 term at CU-Denver is 10 hours per 10-week summer term. A graduate student may contact the school/college dean's office for information on the appeal process regarding an overload.

UNIVERSITY EMPLOYEES

Full-time employees of the University may not undertake more than 6 credit hours per semester. Part-time employees, including assistants, may take the number of credit hours approved by the major department.

TUITION AND FEES

The schedule of tuition and fees is given in the General Information section of this catalog.

REQUIREMENTS FOR ADVANCED DEGREES

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. Students should not expect to obtain all the training, knowledge, and grasp of ideas necessary to meet the requirement for an advanced degree from formal courses. They should work on their own initiative, reading widely and thoughtfully, reaching their own conclusions, and acquiring a sense of values, perspective, and proportion.

All studies offered for credit toward an advanced degree (except those in deficiencies) must be of graduate status.

A student is expected to maintain at least a B average in all work attempted while enrolled in The Graduate School.

For the Ph.D., a course mark below B is unsatisfactory and will not be counted toward fulfilling the minimum requirements for the degree.

A student who fails to do satisfactory work will be subject to suspension from The Graduate School by the dean with the approval of the major department.

Appeal may be made to the Graduate Council. The committee's decision shall be final. A suspended student is eligible to apply for readmission after one year. Approval or rejection of this application rests jointly with the student's major department and the dean. In case of appeal by the student, the final decision will be made by the Graduate Council.

Repeating a Course

A graduate student who receives a grade of C, D, or F in a course may repeat the course once, upon written recommendation to the dean by the chairman of the student's advisory committee and major department, provided the course has not previously been applied toward a degree.

In calculating a student's grade-point average for Graduate School purposes, the grade for a repeated course will substitute for the old grade. Grades earned in courses taken as an undergraduate or as a non-degree student, as well as grades earned in first- and second-year foreign language courses, will not be used in calculating The Graduate School grade-point average; however, all grades received will appear on the student's transcript.
Change of Department or Major

A graduate student wishing to change department or major must submit a new Part I and Part II of the graduate application to the new department or school and request the former department to forward recommendations and credentials. The student must be formally accepted by the new department.

Use of English

A student who is noticeably deficient in the use of standard English in all oral and written work may not obtain an advanced degree from the University of Colorado. Ability to use the language with precision and distinction should be cultivated as an attainment of major importance.

Each department will judge the qualifications of its advanced students in the use of English. Reports, examinations, and speech will be considered in estimating the candidate's proficiency.

Graduate Appeals

Final action on appeals submitted by graduate students concerning action taken by faculty members, programs, or administrative officials rests with the campus Graduate Council, unless such appeal involves a matter affecting two or more campuses. In such a case, the final action rests with the Executive Committee of the System-Wide Graduate School.

MASTER'S DEGREE

A student regularly admitted to The Graduate School and later accepted as a candidate for the Master of Arts, Master of Science, or other master's degrees 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. All studies offered toward the minimum requirement for the degree must be of graduate rank. 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 not inconsistent with the general rules.

Students planning to graduate should ascertain current deadlines of The Graduate School. It is the graduate student's and the department's responsibility to see that all requirements and deadlines are met (i.e. changing of IV grades, notifying The Graduate School of final examinations, etc.).

Departments or program committees may have additional deadlines that must be met by the graduate students in that department or program. It is the student's responsibility to ascertain such requirements and to meet them as designated by the department or program chair.

Minimum Requirements

The minimum requirements of graduate work for the degree Master of Arts or Master of Science may be fulfilled by following either Plan I or Plan II below.

Plan I: By presenting 24 semester hours of graduate work, including a thesis. At least 18 semester hours of this work must be at the 5000 level or above.

Plan II: By presenting 30 semester hours of graduate work, without a thesis. At least 16 semester hours of this work must be at the 5000 level or above.

Plan II does not represent a free option for the student. A candidate for the master's degree may be allowed to select Plan II only on the recommendation of the department concerned.

Graduate Credit

Graduate credit is given for courses that are listed at the 5000 level or above and that are offered by professors who are members of the graduate faculty, or that have otherwise been approved by the dean of The Graduate School. No assurance can be given that work taken by a student will count toward a higher degree unless the student has the approval of the department.

Not all courses listed are available at any one time; some are given in alternate years.

Courses taken during the Fall Semester 1975 and thereafter will have graduate rank if they are taught by members of The Graduate School faculty and are in one of the following categories:

1. Courses within the major program at the 5000 level or above.
2. Courses outside the major program at the 4000 level provided they are approved for a specific degree plan by the faculty of the degree-granting program and by the campus graduate dean.

3. The Master of Basic Science program (M.B.S.) has approval for 3000- and 4000-level courses if approved by the department and the dean of The Graduate School.

4. Courses outside the major program, provided they are approved for a specific degree plan by the faculty of the degree-granting program and by the campus graduate dean. This does not change the minimum number of courses that must be taken at the 5000 level or above; however, as a result, most students who include 4000 level courses of other departments in their program will not exceed those minimum requirements for graduation.

Field of Study

Studies leading to a master's degree may be divided between major and minor subjects at the discretion of the faculty of the degree-granting program.

Status

After students have made a satisfactory record in this University for at least one semester or summer term, and after they have removed any deficiencies that were determined at the time of admission or by qualifying examinations or otherwise, they should confer with their major department and request that a decision be made on their status. This definite status must be set by the major department before students may make application for admission to candidacy for an advanced degree.

Students who are inadequately prepared must make up without credit toward a graduate degree all prerequisites required by the department concerned.

Language Requirements

Candidates must have such knowledge of ancient and modern languages as each department requires. See specific departmental requirements.

Credit by Transfer

Resident graduate work of high quality done in a recognized graduate school elsewhere and coming within the time limit may be accepted up to a limited amount, provided it is recommended by the department concerned and approved by the dean of the school/college.
Course work taken more than 6 years prior to the completion of final requirements (comprehensive exam and/or filing of thesis) will not be accepted for the degree unless validated by a special examination.

The maximum amount of work that may be transferred to this University is 9 semester hours.

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 at this University, but it may reduce the amount of work to be done in formal courses. Requests for transfer of credit to be applied toward an advanced degree must be made on the form specified for this purpose and submitted to The Graduate School by the beginning of the semester prior to that in which the student will be graduated.

Work already applied toward a master's degree received from another institution cannot be accepted for transfer toward the master's degree at the University of Colorado; courses with “Pass/Fail” or “Satisfactory/Unsatisfactory” grades will not be transferred; extension work completed at another institution cannot be transferred; and correspondence work, except to make up deficiencies, is not recognized.

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 semester hours) provided such work:
1. Is completed with distinction in the senior year at this University.
2. Comes within the four-year time limit.
3. Is no lower than a C.
4. Has not been applied toward another degree.
5. Is recommended for transfer by the department concerned and approved by the dean of the school/college.

Requests for transfer of credit to be applied toward an advanced degree must be made on the form specified for this purpose and submitted to the school/college dean of the college or department concerned and approved by the dean of the school/college. The student may register for any specific credit toward a master's degree.
for the degree have been completed. This examination may be given near the end of
their last semester of residence while they are still taking required courses for the
degree, provided they are making satisfactory progress in those courses.

The following rules applying to the comprehensive final examination must be
observed:
1. Students must be registered when they take the examination.
2. Notices of the examination must be filed by the major department in the dean's
office at least 3 days in advance of the examination.
3. The examination is to be given by a committee of three graduate faculty
members appointed by the department concerned in consultation with
the dean.
4. The examination, which may be oral, written, or both, must cover the thesis,
which should be essentially complete at the time, as well as other work done
in the University in formal courses and seminars in the major field.
5. An examination in the minor work taken at this University is optional with the
major and minor departments.
6. The examination must include all work presented for the degree not done in
residence at the University of Colorado, whether in the major or minor field.
The examination on transferred work will be given by representatives of the
 corresponding fields of study in this University.
7. A student who fails the comprehensive final examination may not attempt the
examination again until at least three months have elapsed and until such
work as may be prescribed by the examining committee has been completed.
The student may retake the examination only once.

Supplemental Examinations
Supplemental examinations should be simply an extension of the original exami-
nation and given immediately if the student fails the supplemental examination,
three months must elapse before attempting the comprehensive examination again.

Course Examinations
The regular written examinations of each semester except the last must be
taken. Course examinations of the last semester, which come after the compre-
hensive final examination has been passed, may be omitted with the consent of
the instructor.

Master's Thesis Credit
Every graduate student working toward a master's degree who expects to present
a thesis in partial fulfillment of the requirements for the degree must register
for thesis for a minimum of 4 semester hours or a maximum of 6 semester hours.
The student may register for any specific number of hours in any semester of resi-
dence, but the total number of hours for all semesters must equal the number of
credits the student expects to receive for the thesis. 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.
(The student may not register again for any portion of thesis credit on which
an IP grade has been submitted.)

Time Limit
Master's degree students have 5 years, from the date of the start of course work,
to complete all degree requirements. For students who fail to complete the degree
in this 5 year period, it will be necessary for the program director to file an annual
statement with the graduate dean stating the reasons why the program faculty
believe the student is making adequate progress and should be allowed to
continue in the program. Students who do their work exclusively in summer
terms must complete all degree require-
ments within 72 months from the start
of course work.
A student who does not complete all degree requirements within the specified
period of time must validate, by special examination(s), any course work taken
more than 6 years prior to taking the
masters comprehensive examination or
completing the thesis defense, depending
on which plan is elected.

Deadlines for Master's Degree
Candidates Expecting to Graduate During 1992-93
Deadline dates for the following can be
obtained by calling The Graduate School
office, 556-2663.
1. Last day for requesting transfer of
credit.
2. Applications for admission to can-
didacy. Students are urged to submit this
form by the beginning of the semester
prior to that in which they expect to
receive the degree. (The form may
be picked up in the department or in
The Graduate School office.)
3. Last day for thesis to be approved by
department.
4. Last day for scheduling of comprehen-
sive final examination.
5. Last day for taking comprehensive final
examination.
6. Last day for filing thesis in The Graduate
School. At the time of filing, the thesis
must be complete in all respects and
must meet thesis specifications in order
to be accepted by The Graduate School.
Candidates whose theses are received
after 5 p.m. on the indicated date will
be graduated at the commencement,
following that for which the deadline
is indicated.

DOCTOR OF PHILOSOPHY
The Doctor of Philosophy (Ph.D.)
degree is the highest academic degree
conferred by the University. To state the
requirements for the degree in terms of
credit hours would be misleading because
the degree is not conferred merely upon
the satisfactory completion of a course of
study, however faithfully pursued. Stu-
dents who receive this degree must
demonstrate that they are proficient in
some broad subject of learning and that
they can critically evaluate work in this
field; furthermore, they must have shown
the ability to work independently in their
chosen field and must have made an origi-
nal contribution of significance to the
advancement of knowledge. The technical
requirements stated below are minimal
requirements for all candidates for the
degree; additional conditions set by
the departments will be found in the
announcements of separate departments.
Any department may make additional
regulations consistent with these
general rules.

Studies leading to the Ph.D. degree must
be chosen so as to contribute to special
competence and a high order of scholar-
ship in a broad field of knowledge. A field
of study chosen by the student may be in
one department or it may include two or
more closely related departments. The
criterion as to what constitutes an accept-
able field of study shall be that the stu-
dent's work must contribute to an
organized program of study and research
without regard to the organization of aca-
demic departments within the University.
Students planning to graduate should
obtain current deadline dates in the office
of The Graduate School. It is the graduate
student's and the department's responsi-
bility to see that all requirements and
deadlines are met (i.e., changing of HW
grades, notifying The Graduate School of final examinations, etc.).
Department or program committees may have additional deadlines that must be met by graduate students in that department or program. It is the student's responsibility to ascertain such requirements and to meet them as designated by the department or program chair.

Minimum Course/Dissertation Requirements

A minimum of 30 semester hours of graduate courses and 30 semester hours of dissertation credit are required for the Ph.D. degree.

Course Work Requirement. A minimum of 30 semester hours of courses numbered 5000 or above is required for the degree, but the number of hours of formal courses will ordinarily exceed this minimum. At least 20 of the required hours must be in graduate courses taken at this University. Students who have been admitted to The Graduate School with deficiencies may expect to receive little or no residence credits until the deficiencies have been removed.

Dissertation Hours Requirement. To complete the requirements for the Ph.D., a student must register for a total of at least 30 hours of doctoral dissertation credit, with not more than 10 of these credit hours in any one semester. Not more than 10 dissertation hours may be taken preceding the semester of taking comprehensive examinations. In addition, up to 10 hours may be taken in the semester in which the student passes comprehensives. Dissertation credit does not apply toward the minimum 30 hours of required course work specified above and will not be included in calculation of the student's grade-point average. Only the grades of A, B and IP shall be used.

Course work and work on the dissertation may proceed concurrently throughout the doctoral program; however, at no time shall a doctoral student register for more than 15 hours of 5000-level and above courses. Normally a student must have earned at least three and not more than six semesters of residency before admission to candidacy.

Advisory Committee

As soon as the field of specialization has been chosen, the candidate will request the faculty member with whom the committee wishes to work to act as chair of the advisory committee. The chair, with the advice and approval of the chair of the department, may select two or more additional members to serve on the committee, so that the several fields related to the student's special interest will be represented. A purpose of the advisory committee (beyond guiding the student through graduate study) is to ensure against specialization that is too narrow. The student shall obtain the signature of the chair of the committee (thereby signifying his or her willingness to act) on the Application for Admission to Candidacy form. Any change in the membership of the advisory committee is to be similarly reported.

Residence

The student must be properly registered to earn residence credit. The minimal residence requirement shall be six semesters of scholarly work beyond the attainment of an acceptable bachelor's degree. Mere attendance shall not constitute residence as the word is here used. Residence may be earned for course work completed with distinction, for participation in seminars, or for scholarly research performed here or elsewhere under the auspices of the University of Colorado.

As a guiding policy in determining residence credit for employed students, those who are employed in three-fourths to full-time work that does not contribute directly to their program toward a degree may not earn more than one-half residence credit in any semester. Students who are employed more than one-fourth time and less than three-fourths time in work that does not contribute directly to the degree may earn not more than three-fourths residence credit. Those who have one-fourth time employment or less may earn full residence credit. (All these provisions are subject to the definition of residence credit given in the preceding paragraph.) In case the interpretation of residence credit for any student needs to be clarified, a decision will be made by the chair of the student's advisory committee, the chair of the student's major department, and the dean of The Graduate School.

Two semesters of residence credit may be allowed for a master's degree from another institution of approved standing, but at least four semesters of residence credit, two of which must be consecutive in one academic year, must be earned for work (course and/or dissertation) taken at this University.

A part of the residence requirement for the Ph.D. degree may be spent in another graduate institution, or in field work in absentia (provided that prior approval for work is given by the student's program director and provided that the student's registration is maintained for that period away from the campus).

Preliminary Examination

Each department will satisfy itself (by examination or other means) that students who signify intent to undertake study for the Ph.D. degree are qualified to do so. The means by which each department makes this evaluation shall be specified in departmental requirements. Students who are thus evaluated will be notified immediately of the results. The results of this preliminary evaluation shall be reported to The Graduate School office on the Application for Candidacy form filed by the student at least two weeks before the comprehensive examination is attempted.

Language Requirement

The decision on foreign language requirements for Ph.D. degrees is the responsibility of the graduate faculty of each graduate program.2

Credit by Transfer

Resident graduate work of high quality earned in another institution of approved standing will not be accepted for transfer to apply toward the doctorate until the student has established a satisfactory record in residence in this Graduate School, but such credit must be transferred before the student makes application for admission to candidacy for the degree. Such transfer will not reduce the minimum residence requirement at this University, but it may reduce the amount of work to be done in formal courses. The maximum amount of work that may be transferred to this University for the Ph.D. is 30 semester hours.

Application for Admission to Candidacy

A student must make formal application for admission to candidacy for the Ph.D. degree on forms supplied by The Graduate School at least 2 weeks before the comprehensive examination is attempted.

A student shall have earned at least three semesters of residence, and shall

2Approved by a vote of the system-wide graduate faculty on February 7, 1990.
have passed the comprehensive examination before admission to candidacy for the degree.

Continuous Registration Requirements for Doctoral Candidates

Following successful completion of comprehensive examinations, students must register continuously. Students admitted to candidacy for degree will register for and be charged for seven hours of credit for each full-time term of doctoral work. For each term of part-time enrollment, students will be charged for seven hours of dissertation credit, except that students not making use of campus facilities may petition The Graduate School for three-credit-hour status. Continuous registration during the academic year will be required until completion of the dissertation defense. It is expected that the student and advisor will consult each semester as to the number of hours for which the student will register, consistent with the classification identified above.

Comprehensive Examination

Before admission to candidacy for the Ph.D. degree, the student must pass a comprehensive examination in the field of concentration and related fields. This examination may be oral, written, or both, and will test the student's mastery of a broad field of knowledge, not merely the formal course work completed. The oral part is open to members of the faculty. The student must be registered at the time the comprehensive examination is attempted.

The examination shall be conducted by an examining board appointed by the chair of the department concerned and be approved by the campus graduate dean. The board shall consist of the advisory committee and additional members as necessary to total a minimum of five. A successful candidate must receive the affirmative votes of a majority of the members of the examination board. In case of failure, the examination may be attempted once more after a period of time determined by the examining board.

Dissertation Requirements

A thesis based upon original investigation, showing mature scholarship, critical judgment, and familiarity with the tools and methods of research, must be written upon some subject approved by the student's major department. To be acceptable, this dissertation should be a worthwhile contribution to knowledge in the student's special field. It must be finished and submitted in typewritten form at least 30 days (in some departments, 90 days) before the day of the final examination and must be formally approved and made available for inspection by the examining committee before the final examination may be taken.

In mechanical features, all dissertations must comply with the specifications of The Graduate School as outlined in the Directions for Preparing Masters' and Doctoral Theses which may be obtained from The Graduate School.

It is the student's responsibility to notify The Graduate School of the exact title of the dissertation at least six weeks prior to the commencement at which the student will graduate. This title will be printed in the commencement program (May graduation only).

Two formally-approved, typewritten copies of the dissertation, including abstract, plus one additional copy of the title page and abstract must be filed in The Graduate School office at least two weeks before the date on which the degree is to be conferred.

The abstract, not to exceed 350 words, will be published in Dissertation Abstracts International. The determination of what constitutes an adequate abstract shall rest with the major department.

All dissertations must be signed by no fewer than two members of the major department staff who are regularly engaged in graduate instruction.

All approved dissertations are kept on file in the library.

When the dissertation is deposited in The Graduate School, the candidate must pay the thesis-binding fee and sign an agreement with University Microfilms International to allow for publication in Dissertation Abstracts International and to grant University Microfilms International the right to reproduce and sell (a) copies of the manuscript in microform and/or (b) copies of the manuscript made from microform. The author retains all rights to publish and/or sell the dissertation by any means at any time except by reproduction from negative microform.

Final Examination

After the dissertation has been accepted, a final examination of the dissertation and related topics will be conducted. This examination will be wholly or partially oral, the oral part being open to anyone. The examination will be conducted by a committee consisting of at least five persons, one of whom must be from outside the student's department. More than one dissenting vote will disqualify the candidate in the final examination.

Arrangements for the final examination must be made in the graduate dean's office at least two weeks in advance. The examination must be scheduled not later than two weeks before the date on which the degree is to be conferred. A student must be registered at the time of the final examination.

Time Limit

If a student fails to complete all requirements for the degree within the prescribed number of years from the date of the start of course work in the doctoral program, a second examination similar to the first will be required before the candidate may take the final examination. The number of years allowed for completion is normally six, but in some programs it may be seven. If the comprehensive examination is failed, it may be attempted once more after not fewer than eight months of further work. For students who fail to complete the degree in this 6 year period, it will be necessary for the department to file an annual statement indicating that the program director believes the student is making adequate progress and should be allowed to continue in the program. This request must be signed by three members of the graduate faculty who serve on the student's thesis advisory committee. If approved by the campus graduate dean, the student may continue his/her studies for one additional year. If not approved, the student may be dropped from the program.
with a lasting ability to produce architecture and planning responsive to the changing needs of society.

It is on these premises that our School is in constant search of the manifest, ideas, and forms for the betterment of the living environments. A community of culturally diverse educators and practitioners centered in an island by the backdrop of the Rocky Mountains provides a unique opportunity for intense study of architecture and planning.

Mission and Organization

The School is composed of three graduate degree programs in architecture, landscape architecture, and urban and regional planning (M.Arch., M.L.A., M.U.R.P.). It also offers urban design as an area of specialization in the architecture program (M.Arch. in Urban Design). As a unit of graduate professional education with three professional degree programs and a mandate for national excellence and recognition, the School expects to go beyond training students in basic skills for entry-level positions. The School's overall mission is to develop the design capabilities of the individuals and the design professions as a whole as well as provide the intellectual framework which supports design.

Considering this mission, the School emphasizes basic professional training and education necessary for entering professional practice in its first professional degree programs. The post-professional and advanced degree programs are directed toward professionals at various career stages and focus on research and specialization.

The School supports interdisciplinary work in its programs and focuses on professional education and research concerning the design and planning of the built environment. Within this interdisciplinary approach, it recognizes the professional community input and the role of the other academic disciplines such as humanities, social sciences, and engineering.

In the School's degree programs, various architecture and planning ideologies and views are examined with respect to their historical setting. This examination is combined with critical reviews of design work, dialogues, and methods to form the essential ingredient of design education. Through this dialectic of analyzing and synthesizing, students gain increased understanding of those humanistic ideals underlying the architecture and planning of buildings and spaces and relate them to their own developing personal aspirations.

The School is committed to design as its central intellectual concern and is the largest graduate school of architecture in the western region. Design is used in its broadest sense to include a full range of philosophies, ideologies, theories, and methods. The School's mission is education, research, and development of arts and sciences of architecture and planning.

Academic Programs

The three graduate programs are interdisciplinary, and, in the design fields, both first and post-professional degrees are offered. In addition, it is possible for students to obtain two degrees, M.Arch. and M.U.R.P. for example, and reduce the time required for doing so by coordinating their programs.

The first professional degree programs are structured for full-time graduate study. For students with employment obligations, most of these programs can be taken on a part-time basis. Usually the first year of the full-time program must be completed before it can be taken part-time.

Within any of the programs, the School of Architecture and Planning offers opportunities to develop a self-tailored area of concentration through its varied offerings in architecture, landscape architecture, urban design, and urban and regional planning. Electives ordinarily can be taken from any program in the School and from another school in the University with the approval of the student's advisor.

The School maintains membership in:
- Association of Collegiate Schools of Architecture
- Association of Collegiate Schools of Planning
- Council of Landscape Architecture Educators
- Landscape Architecture Accreditation Board
Planning Accreditation Board
Tau Sigma Delta Honor Society
Sigma Delta Lambda Honor Society
Academic Environment and
Student Body
In addition to its regular curriculum
programs, the School supports or spon­
sors a variety of events and activities that
enlarge and broaden the learning environ­
ment in the School. Student internships for
credit are available during the aca­
demic year. A summer international study
program is offered. The School sponsors
three receptions—at the beginning of the
academic year, before Christmas, and at
the end of the academic year—along with a
Beaux Arts Ball in the spring, for stu­
dents and the local professional com­
munity. Finally, the School sponsors several
exhibitions of design and art works.
There are about 275 full-time students
in the School. The student body is diverse,
representing many academic disciplines and
a wide variety of previous academic
institutions. Students have previous
degrees from a number of universities
around the world.

Lecture Series
Guest critics are frequently invited to
the School. In addition, the School has an
official lecture series every year. The Le­
cature Series is composed of distinguished
practitioners, critics, and scholars of
national and international stature. Visit­
ing critics and speakers include: Stanley
Allen, Amy Anderson, Nader Ardalan,
Ann Bergren, Jennifer Bloomer, Christine
Boyer, James Corner, Livio Dimitriu,
Peter Eisenman, Tzann Hour Fang,
Kenneth Frampton, Mario Gandelsonas,
Diane Ghirardo, Michael Hays, Mark
Johnson, Keith Loftin, Greg Lynn,
Rodolfo Machado, Art McDonald, lan
McHarg, John Meunier, David Niland,
John Novack, Patrick Quinn, Dennis Rad­
ford, George Ranalli, Frank F. Sanchis,
Thomas Schumacher, Robert Segrest,
Werner Seligman, Bahram Shirdel,
Vladimir Slapeta, Michael Sorkin,
John R. Stilgoe, Harry Teague, William
Turnbull, Anne Vernez-Moudon, Anthony
Vidler, Peter Waldman, Peter Walker,
Michael Web, Morgan Dix Wheelock,
and Lebbeus Woods.

SCHOOL FACILITIES
The School's studios, library, Macintosh
Architecture and Design Laboratory,
Auto-Cadd Computer Laboratory, photo
laboratory and darkroom, model shop,
galleries, and offices are housed in three
floors of the CU-Denver Bldg. in 50,000
square feet of space. The laboratories
and facilities were developed through an
endowment by noted architect Temple
Hoyne Buell, FAIA.

CADD Computer Laboratory
The CADD Laboratory of the School of
Architecture and Planning is located adja­
cent to the Macintosh Architecture Labo­
ratory and supports advanced
computer-aided design and drafting with a
microcomputer based network which has
been modified and expanded. The labora­
ory is equipped with 10 state-of-the-art
DOS based units with high resolution
graphic monitors, and all the peripherals
and software needed for advanced two
and three dimensional modeling.

Building Technology
Laboratory
The Building Technology Laboratory
functions as a teaching and research facil­
ity for both students and outside practi­
tioners. For the student, through hands-on
experiment and physical demonstration,
it is used to facilitate the learning process
as well as bridge the gap between theoretical
concepts and practical applications.
For practitioners, this facility is used to
enhance their practice and update their
knowledge.

Some examples of equipment and facili­
ties available include data acquisition
systems, lighting research equipment,
Macintosh visual input package, windflow
simulation table, video equipment, and
data logging equipment.
The windflow simulation table allows
the designer to analyze various windflow
patterns on two-dimensional forms. By
allowing water to flow continuously in a
given direction and by adding an even
distribution of ink to identify the flow
patterns, an immediate study can be
encountered on a given site configuration.
The data logging equipment allows an
automatic collection of data for a specific
time and period. When furnished with the
appropriate sensors, the following data
can be obtained: temperature (surface
temperature, air temperature, and
subsurface temperature), moisture (wet­
bulb temperature and relative humidity),
solar radiation, lighting intensity, and
wind speed.

Photo Laboratory. Our new photogra­
phy lab, with the latest state-of-the-art
equipment, is used for architectural pho­
tography classes and by students
to produce material for their portfolios.
There are separate areas for developing, enlar­
ging, drying, and copying.

Model-Making Laboratory. Students
have an 800-square-foot model shop in
which to build projects for their classes.
Table saws, jigsaw, drill presses, jointers
and a full range of hand tools will allow the student to build models of wood, plastic, and steel. An adjacent paint spray room is equipped with a ventilated paint booth and vapor-proof lighting.

ADMISSIONS

General Requirements

The School of Architecture and Planning has an Academic Affairs Office. Primary responsibilities of this office include answering admission inquiries, processing admissions applications, awarding tuition scholarships, enforcing studio and laboratory rules, hearing student grade appeals, overseeing students’ rights and responsibilities, approving new course proposals, enforcing academic policies, and processing graduation applications.

Each applicant for admission into any of the programs of the School of Architecture and Planning must submit:

1. The University of Colorado Application for Graduate Admission forms.
2. Two official transcripts from each institution the applicant has attended.
3. Three letters of recommendation.
5. Examples of creative work (see below).
6. The application fee.

Special requirements for international applicants are described in a following section.

Examples of Creative Work. In architecture, landscape architecture, and urban design, applicants are expected to present ample of their creative and analytic work, commonly referred to as a portfolio. A portfolio is an orderly presentation of one’s work. This includes examples of creative and analytical work including but not limited to essays, papers, photographs and photographic reproduction of artistic work such as sculpture, drawings, paintings, musical composition, and other fine arts. The format must be $8\frac{1}{2} \times 11\"$ bound with not more than twelve pages (excluding papers). Slides are not accepted. All portfolios must be identified by the student’s full name and program to which he student is applying. A stamped, self-addressed envelope must be included or return of portfolio.

In general, a minimum of 3.0 grade-point average (GPA) on a 4.00 scale (or equivalent) in the prior undergraduate or graduate degree is required for admission. Applicants with a GPA under 3.00 may be reviewed for admission; in such cases, submission of strong supporting materials is advised. For applicants with a GPA under 3.00, GRE scores are normally required for the Urban and Regional Planning Program and strongly recommended for applicants to the other programs.

The admissions decision is made weighing a variety of factors including academic preparation, quality of work experience and portfolio, appropriateness of the applicant’s purpose, and overall likelihood of success in the program. Applicants may be admitted as non-degree students or with special conditions. Because of space limitations, not all qualified applicants may be accepted. Specific requirements for each program are listed below.

MASTER OF ARCHITECTURE
(First professional degree; three and one-half year program)

The three and one-half year (114 semester hours) program is appropriate for applicants with a bachelor’s degree and no prior training or background in architecture or related field. Prerequisites are one year of college-level physics and college mathematics through a first course in calculus. For those without these prerequisites, courses are held in the summer term preceding the first semester.

Admission to the three and one-half year program with advanced standing

MASTER OF ARCHITECTURE
(First professional degree; three and one-half year program with advanced standing)

Admission to the three and one-half year program with advanced standing is appropriate for applicants with a non-professional bachelor’s degree in architecture or a bachelor’s degree in a related field (engineering, design, art). Depending on their undergraduate record, qualified applicants with a non-professional architectural degree (the first part of a 4 + 2 program) would ordinarily be given advanced standing of up to one curriculum year in the program. Applicants with degrees in related fields may be exempted from courses in their specific areas of preparation but may be required to take all the courses in the architectural design sequence. The number of credits and exact point of entry into the program will be determined by the program director.

MASTER OF ARCHITECTURE
(Post-professional degree)

The one-year (36 semester hours) post-professional degree program is appropriate for applicants holding a Bachelor of Architecture or equivalent first professional degree or diploma in architecture.

MASTER OF ARCHITECTURE IN URBAN DESIGN
(One-year post-professional degree)

The one-year (36 semester hours) program is appropriate for applicants with a first professional degree design in architecture (e.g. B.Arch., M.Arch.).

MASTER OF LANDSCAPE ARCHITECTURE
(First professional degree)

The three-year (90 semester hours) first professional degree program is appropriate for those with a bachelor’s degree and no training or background in landscape architecture or a related design field.

MASTER OF LANDSCAPE ARCHITECTURE
(Post-professional degree)

The two-year (48 semester hours) post-professional degree program is appropriate for applicants with a first professional degree design (B.S.L.A., B.L.A., B.Arch., for example). Applicants without a prior Landscape Architecture degree may be required to take additional core requirements in Plant Materials and Ecology.

MASTER OF URBAN AND REGIONAL PLANNING

The two-year (51 semester hours) program is appropriate for applicants with bachelor’s degrees in either design, humanities, social, or physical sciences.

International Applicants

Competence in oral and written English is expected in the School. The School of Architecture and Planning requires a minimum of 550 TOEFL score for international students from non-English speaking countries. However, the School will consider applications from students with strong academic credentials whose TOEFL scores are slightly below 550. If accepted, these students will be required to register and successfully complete a one credit hour technical writing workshop. This one credit hour cannot be used to fulfill part of the degree requirements.

Submission Requirements. International applicants must submit:
1. An International Student application and Graduate Admission forms.
2. Two official transcripts from each United States collegiate institution the applicant has attended.
3. Two certified copies of official academic records from each collegiate institution the applicant has attended outside the United States. A certified literal English translation must accompany documents that are not in English.
4. Four letters of recommendation.
5. A statement of purpose.
6. A portfolio of academic, creative, and professional work.
7. A nonrefundable $50 application fee.
8. A current CU-Denver Financial Resources Statement. Statements used for other institutions will not be accepted. Photocopied documents are not acceptable unless signed by the originator; signatures must not be photocopies.
9. Official TOEFL Score Report to establish English language proficiency. Institutional TOEFL reports are not acceptable. Additional supporting documents may subsequently be required by the office of Admissions. All international applicants who are admitted to CU-Denver must have a valid visa and must enroll for and maintain a full course of study (12 or more semester hours) leading to the completion of a master’s degree.

Financial Requirements: International applicants must provide evidence that they have sufficient funds available to attend the University of Colorado at Denver. To provide this evidence each international applicant should follow these instructions:
1. Complete the Financial Resources Statement. You must prove that you have sufficient money to pay your expenses by submitting the Financial Resources Statement as a part of your application.
   a. If you are using your own money, your bank must certify that you have the full amount of money on deposit to meet tuition and expense costs. In Part 2, Section 1 of the Financial Resources Statement, your bank must certify that the money the applicant needs is on deposit in your account.
   b. If you are being sponsored by a family member, or a friend, your sponsor must agree to provide the money and sign the Financial Resources Statement in Part 2, Section 2. Your sponsor’s bank must certify that the sponsor has on deposit the amount of money you will need.
   c. If you have been awarded a scholarship, Part 2, Section 3 of the Financial Resources Statement must be completed.
2. An incomplete statement of financial resources or failure to prove the availability of the necessary money will delay or cause the denial of your admission to the University. Be sure your Financial Resources Statement is accurate and complete.

Dates and Deadlines
All programs in the School admit for all semesters. However, acceptance for the Spring and Summer Semesters will be on a space-available basis only. See the Academic Calendar in this catalog or the Schedule of Classes for specific dates.
To be considered for Fall Semester admission, all application materials must be received by the previous March 15. Applicants will be notified concerning their acceptance prior to May 1. To be considered for Spring Semester admission, all application materials must be received by the previous November 1.
Applications received after March 15 or November 1 may be considered for non-degree status only.
Deadlines for submission of application materials:
March 15 – for Fall Semester regular admission
April 15 – for Summer Term regular admission
November 1 – for Spring Semester regular admission
Applications after these dates will be considered only on a space-available basis.
Persons interested in any of the programs or in visiting the School are invited to call the Architecture and Urban Design Programs at (303) 556-2877, and the Landscape Architecture and Urban and Regional Planning Programs at (303) 556-3479 to arrange an appointment. For application forms or additional information, please write to:
Office of the Dean
School of Architecture and Planning
University of Colorado at Denver
Campus Box 126
P.O. Box 173364
Denver, Colorado 80217-3364
(303) 556-3382

PROGRAMS OF STUDY

Architecture
Program Director: Peter A. Schneider
Office: CU-Denver Bldg., Third Floor
Telephone: 556-2877

The architecture program offers curricula leading to both first and post-professional Master of Architecture degrees. The first professional Master of Architecture (M.Arch.) is fully accredited by the National Architectural Accrediting Board (NAAB) and is composed of five basic core areas: Architectural Design, History and Theory, Environmental Context, Science and Technology, and Professional Practice.
Most states require that an individual intending to become an architect hold an accredited degree. There are two types of degrees that are accredited by the National Architectural Accrediting Board: (1) The Bachelor of Architecture, which requires a minimum of five years of study, and (2) The Master of Architecture, which requires a minimum of three years of study following an unrelated bachelor’s degree or two years following a related preprofessional bachelor’s degree. These professional degrees are structured to educate those who aspire to registration/licensure as architects.
The four-year, preprofessional degree, where offered, is not accredited by NAAB. The preprofessional degree is useful for those wishing a foundation in the field of architecture, as preparation for either continued education in a professional degree program or for employment options in architecturally related areas.
The program’s primary objective is to prepare students to enter the practice of architecture with a thorough foundation in the bodies of knowledge and applied methods. More specifically, the objectives of the program are to develop: an awareness of and sensitivity to the quality of the human environment; architectural context; deep understanding of architectural history, theory and criticism; thorough knowledge of architectural and building technology; competence in design process and expression with particular emphasis on exploration, experimentation, and synthesis; understanding of the institutional framework within which architecture takes place; and skills and understanding of professional practice including management and professional conduct.
The ultimate goal of the program is to provide the architecture student with a deep appreciation of architecture, while
acquiring critical capacity, through comprehe­nsion of all facets of architecture. This is achieved through five groups of courses, organized in sequences within five coordinated modules.

MASTER OF ARCHITECTURE I
(First professional degree)

Three and one-half year program. The first professional Master of Architecture degree program is a 114 semester hour program requiring three and one-half years (six semesters and a summer term) of full-time study. The curriculum consists of a core of five related course components and 21 semester hours of electives that may be used for a concentration.

The program is taught at three levels, each with a theme. The first level involves the theme principles, definitions, communication, and design abstraction and takes the first two semesters. The next level takes three semesters and involves a dual theme—architecture in context and applications of methodologies. The theme of the final level in the third year is synthesis and professional competency.

The Curriculum—Three and One-Half Year Program

DESIGN:
18 semester hours

ARCH 5500 (6) Introduction to Architectural Design Studio I
ARCH 5501 (6) Introduction to Architectural Design Studio II
ARCH 5502 (6) Architectural Design Studio III
ARCH 6600 (6) Architectural Design Studio IV
ARCH 6601 (6) Architectural Design Studio V
ARCH 6700 (6) Advanced Architectural Design Studio VI
ARCH 6701 (6) Advanced Architectural Design Studio VII
ARCH 5510 (3) Elements of Design Expression and Presentation I
ARCH 5511 (3) Elements of Design Expression and Presentation II

HISTORY AND THEORY:
5 semester hours

ARCH 5520 (3) Introduction to Design Theory and Criticism
ARCH 5521 (3) Survey of Architectural History
ARCH 6620 (3) Architecture in the 18th through 20th Centuries

ARCH 6621 (3) History of Architectural Theory

Electives: 6 semester hours

ENVIRONMENTAL CONTEXT:
6 semester hours

LA 6632 (3) Site Planning
UD 6620 (3) Architecture of the City

SCIENCE AND TECHNOLOGY:
21 semester hours

ARCH 5530 (3) Structures I
ARCH 5531 (3) Structures II
ARCH 5532 (3) Building Technology I
ARCH 5533 (3) Environmental Control Systems I
ARCH 6630 (3) Structures III
ARCH 6631 (3) Environmental Control Systems II
ARCH 6636 (3) Building Technology II

PROFESSIONAL PRACTICE:
3 semester hours

ARCH 6750 (3) Professional Practice

ELECTIVES:
18 semester hours

ARCH 6630 (3) History of Architectural Theory

Electives: 6 semester hours
COURSE SEQUENCE: FIRST PROFESSIONAL DEGREE

<table>
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<tr>
<th>COURSE SEQUENCE</th>
<th>DESIGN</th>
<th>HISTORY/THEORY</th>
<th>ENVIRONMENTAL CONTEXT</th>
<th>SCIENCE &amp; TECHNOLOGY</th>
<th>PROFESSIONAL PRACTICE</th>
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</table>

Advanced Standing in the three and one-half year program. Students admitted with advanced standing to the first professional degree program follow a course of study based on an evaluation of their academic credentials which takes place during the admissions process. Students who have degrees in related fields may be exempt from certain required courses. Students who have completed a pre-professional bachelor's degree in an accredited 4 ± 2 program will be given advanced standing of up to one curriculum year in the program. The number of credits and exact point of entry into the program will be determined by the Program Director.

MASTER OF ARCHITECTURE II (Post-professional program)

The post-professional program in architecture is an advanced curriculum which focuses on research and specialization. The program offers four options of study: 1) Architectural Experimentation, 2) Architecture and Design with Macintosh, 3) Building Technology, and 4) Real Estate Development. The first option, Architectural Experimentation, is suited for students intending to further their knowledge in theory and criticism of architecture. Students are guided to investigate, explore, and experiment with ideas of non-conventional nature and to advance their design ability.

The second option, Architecture and Design with Macintosh, is designed to prepare the student for specialization in computer application in design generation and development.

The third option, Building Technology, prepares students for specialization in building performance studies utilizing the School's sophisticated Building Technology Laboratory. Solar, thermo, acoustics, and lighting studies are several main specializations offered by the faculty.

The fourth option, Real Estate Development, focuses on architecture and development process utilizing the expertise of Architecture and Urban and Regional Planning Program faculty.

Option I: Architectural Experimentation
Option II: Architecture and Design with the Macintosh
Option III: Building Technology
Option IV: Real Estate Development

Courses:

- ARCH 6622 (3) Modern Architecture
- ARCH 6623 (3) Investigations in Architecture
- ARCH 6627 (3) Post-Structuralist Architecture
- ARCH 6628 (3) Theories of Avant Garde
- ARCH 6632 (3) Building Performance Analysis
- ARCH 6633 (3) Lighting
- ARCH 6640 (3) Introduction to Computer Graphics
- ARCH 6641 (3) Computer Applications in Architecture
- ARCH 6642 (3) Design and Architecture with the Macintosh
- ARCH 6643 (3) Advanced Design Applications with the Macintosh
- ARCH 6704 (6) Architectural Experimentation I
- ARCH 6705 (6) Architectural Experimentation II
- ARCH 6950 (6) Thesis Research and Programming
- ARCH 6951 (6) Architecture Thesis
- URP 6660 (3) Real Estate Development Process
- URP 6661 (3) Real Estate Development Finance
- URP 6662 (3) Real Estate Market Analysis
- URP 6664 (3) Fiscal Impact Analysis
### COURSE SEQUENCE: OPTION I, ARCHITECTURAL EXPERIMENTATION

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<tr>
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### COURSE SEQUENCE: OPTION II, ARCHITECTURE AND DESIGN WITH THE MACINTOSH

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### COURSE SEQUENCE: OPTION III, BUILDING TECHNOLOGY

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### COURSE SEQUENCE: OPTION IV, REAL ESTATE DEVELOPMENT

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### ARCHITECTURE ELECTIVES:

- ARCH 5540 (3) Design Photography
- ARCH 6610 (3) Furniture Design
- ARCH 6622 (3) Modern Architecture
- ARCH 6623 (3) Investigations in Architecture
- ARCH 6624 (3) The Built Environment in Other Cultures I: Research Design
- ARCH 6910 (6) The Built Environment in Other Cultures II: Field Experience
- ARCH 6627 (3) Post-Structuralist Architecture
- ARCH 6628 (3) Theories of Avant Garde
- ARCH 6632 (3) Building Performance Analysis
- ARCH 6633 (3) Lighting
- ARCH 6634 (3) Materials and Detailing I: Residential
- ARCH 6635 (3) Materials and Detailing II: Commercial
- ARCH 6640 (3) Introduction to Computer Graphics
- ARCH 6641 (3) Computer Applications in Architecture
- ARCH 6642 (3) Design and Architecture with the Macintosh
- ARCH 6643 (3) Advanced Design Applications with the Macintosh
- ARCH 6683 (3) Teaching Methods in Architecture
- ARCH 6704 (6) Architectural Experimentation I
- ARCH 6705 (6) Architectural Experimentation II
- ARCH 6720 (3) American Art and Architecture
- ARCH 6721 (3) Art and Architecture of Islam
- ARCH 6722 (3) Latin American Art and Architecture
- ARCH 6723 (3) Oriental Art and Architecture
- ARCH 6740 (3) Computer Aided Design
- ARCH 6930 (3) Architecture Internship
- ARCH 6931 (3) Architecture Internship
- ARCH 6950 (6) Thesis Research and Programming
- ARCH 6951 (6) Architecture Thesis
Architecture Courses

ARCH 5050-3. Applied Mathematics for Designers I. This class is designed for the student with little or no college MATH experience. It begins with arithmetic skills and short-cuts, continues through college level algebra, and ends with trigonometry. This class is part of the required mathematics for students of architecture, but is recommended for anyone of non-technical background.

ARCH 5051-3. Applied Mathematics for Designers II. A continuation of ARCH 5050, this class will begin with analytical geometry and continue through differential and integral calculus. The course completes the mathematics requirement for students of architecture and is open to those who have credit for or feel competent in the material covered in ARCH 5050.

ARCH 5052-3. Environmental Science for Designers. This course is designed to meet the requirements of the school of architecture and planning for entrance into the graduate program in architecture. The basic principles of physics will be covered in a practical way. The course includes the mechanics of bodies at rest, dynamics, electricity, heat, light, and sound. The course is recommended for anyone who needs a working knowledge of science.

ARCH 5500-6. Introduction to Architectural Design Studio I. The introductory studio focuses on the basic strategies and techniques of design production. Students are introduced to architectonics, design analysis and criticism, and the significance of the elements of design. Emphasis is placed on development of an awareness of the role of architectural theory and history in the design process. Prereq: ARCH 5050, 5051, and 5052; coreq: ARCH 5510, 5520 and 5530.

ARCH 5501-6. Introduction to Architectural Design Studio II. The second introductory design studio continues the examination of the issues raised in the first semester and begins investigation of more complex issues related to building design and landscape. Emphasis is placed on developing a systematic approach to design while simultaneously dealing with the development of theory and intellectual inquiry. Prereq: ARCH 5500; coreq: ARCH 5511, 5521, and 5531.

ARCH 5502-6. Architectural Design Studio III. The first intermediate studio in architecture focuses on the interrelationship between architectural design and the art of construction. The course acts as a transition between the abstract and theoretical concerns of the introductory studios and the thoughtful realization or practice of ideas. The emphasis is placed on development of how a building is put together as a material conceptual construct. Prereq: ARCH 5501; coreq: ARCH 5532 and 5533.

ARCH 5510-3. Elements of Design Expression and Presentation I. This course covers the basic principles of descriptive geometry (technical drawing). Basic principles of orthographic projection, axonometric projection, perspective, and photographic reproduction methods (portfolio) are examined. Emphasis is placed on defining abstract forms and real objects in terms of line, light, shade, and shadow.

ARCH 5511-3. Elements of Design Expression and Presentation II. This course builds upon the basic principles and issues in the previous semester. Craft and precision are stressed, but with an emphasis toward design articulation and individual expression. Students are introduced to a wide range of compositional techniques and methods and selection of media and materials. The subjects covered are: drawing as analysis; drawing as representation; principles of color interaction; and means of representing architectural space in terms of color, light, shade, and shadow gradation and value distinction.

ARCH 5520-3. Introduction to Design Theory and Criticism. This course examines the evolution of ideals and principles in modern architecture, design, landscape, and urbanism and traces the historical development of theoretical issues through a study of selected writing. The course provides an overview of the literature in design theories and explores the relationship between design and the writings that include its interpretation and production.

ARCH 5521-3. Survey of Architectural History. The second course in the history/theory sequence, beginning with architecture and urbanism in antiquity, stresses the origin and interpretation of built form as symbol and the problems of early building technology and development of tradition in European architecture and urbanism. It examines the emergence of building types and settlement patterns and their relationship to social institutions. Case studies are drawn from pre-classical, classical, and late antiquity, Gothic, Renaissance, and Baroque architecture.

ARCH 5530-3. Structures I. The course introduces the analysis and design of structural elements and focuses on fundamental principles of statics and strength of materials. Areas covered are equilibrium, movement, trusses, three force members, properties of structural materials including wood and steel, stress-strain relationships, and an introduction into the design and analysis of structural elements made of wood and steel in tension, shear, and bearing.

ARCH 5531-3. Structures II. The course is a continuation of Structures I, focusing on study of stress determination of structures, and general principles involved in the design of wood, steel, and concrete members. Problems in design of building elements subjected to direct stress, bending, and combined stress, deflection, methods of fabrication, and details of connections are explored.

ARCH 5532-3. Building Technology I. This course addresses issues in building construction and focuses on interrelationships between architectural concepts and objectives and building construction techniques through lectures, case study presentations, and exercises. It focuses on the wide range of materials and construction techniques available to meet design objectives.

ARCH 5533-3. Environmental Control Systems I. This course focuses on study of environmental control systems in building, including the thermal behavior of buildings, climate as a major determinant of building design, energy use in buildings strategies for designing buildings as complete environmental control systems, mechanical means of environmental controls, heating, ventilation, air conditioning, plumbing, electrical, and communication systems, water supply, and sanitation systems.

ARCH 5540-3. Design Photography. This course will introduce architectural students to the basics of photography and architectural photography. Class will be a combination of lecture/demonstration and student assignments followed by evaluation. The course will enable the student to produce his or her own working photographs of drawings, models, and buildings.

ARCH 6600-6. Architectural Design Studio IV. The second intermediate studio sequence focuses on exploration of architecture in the urban context and examination of typological form and cultural constructs which will provide a basis for the inclusion of new spaces and forms within the fabric of the city. Emphasis is placed on methodological study of site, program, and elements of architecture which are used to facilitate work.

ARCH 6601-6. Architectural Design Studio V. The final intermediate studio sequence focuses on examination of impacts of large-scale urban projects that
include commercial, office, and residential uses in an existing urban fabric. Issues such as typology, character, and monumentality are considered in relation to the design of buildings of civic significance. Emphasis is placed on relationship of the role of the building to the morphology of the city and the building's expression in architectural form.

ARCH 6620-3. Architecture in the 18th Through 20th Centuries. The third course in the history/theory sequence focuses on the breakdown of the Baroque synthesis and the coming of classical and romantic historicism in architecture and the birth of modern architecture. The impact of technology, industrialization and social changes on architecture and urbanism, changing attitudes toward the treatment of architectural space and the formation of new critical concepts, and the emergence of Art Nouveau and the roots of the "Modern Movement" in architecture are examined.

ARCH 6621-3. History of Architectural Theory. This course investigates architectural thought from antiquity to the present. It begins with a review of Greek ideals and then proceeds — through an appreciation of architecture and its texts as an essential cultural constituent — with a survey of major themes such as Renaissance Humanism, Enlightenment Rationalism, Romantic Historicism, Neo-Medievalism, the varieties of Modernism, Neo-Eclecticism, and the most recent directions.

ARCH 6622-3. Modern Architecture. This course examines modern architecture from De Stijl and Bauhaus to Le Corbusier. Emphasis is placed on critical evaluation of this developmental stage and its impact on discipline of architecture and city design.

ARCH 6623-3. Investigations in Architecture. This course focuses on examination of the historical development of theoretical issues through a study of selected writings and the evolution of ideas and design principles in architecture, landscape architecture, and urbanism. It explores the pedagogic relationship between design and the cultural roots that influence its interpretation and production.

ARCH 6624-3. The Built Environment in Other Cultures I: Research Design. This course intends to broaden students' perspectives by asking them to examine design within another culture. Each student will prepare a proposal of study including a statement of the problem to be addressed, the type of field research to be undertaken, and the nature of the report produced.

ARCH 6627-3. Post Structuralist Architecture. This course examines theories of post-structuralism and their implications to architectural exploration and experiments. Drawing from Bataille, Descartes, Derrida, Husserl, Heidegger, Barthes, Foucault, and other leading authorities, the course focuses on development of a theoretical discourse for architecture.

ARCH 6628-3. History of Interior Design. This course is a survey and critical analysis of major 20th century interiors. It begins the process of relating interior environments from antiquity to contemporary by focusing on furnishings, the decorative arts, interior architectural detailing, and interior architectural spaces. The special focus is on critical evaluation and analysis of historical precedents.

ARCH 6630-3. Structures III. This course examines theoretical and conceptual bases for the qualitative and quantitative analysis of indeterminate structures. Course topics include continuity, movement distribution, reinforced concrete elements, precast prestressed elements, walls, columns, footings, earthquake loads on buildings, and detailing of structural systems.

ARCH 6631-3. Environmental Control Systems II. The course focuses on lighting and acoustics. Illumination quantity and quality, day lighting and electric lighting, lighting design and applications are covered. The behavior and effect of daylight are studied through the construction of models. Techniques such as preparation of working drawings and specifications are covered.

ARCH 6632-3. Building Performance Analysis. This course addresses issues in performance integration of overall building components and the ability to predict architectural design performance in advance. Students will experience the use of up-to-date technology, laboratory facilities, guided hands-on experiments, on-site observation, and computer simulation.

ARCH 6633-3. Lighting. This introductory course in lighting investigates the processes and the objectives of lighting and provides the vocabulary and mechanics necessary to the understanding and interpretation of lighting needs in design. Strategies and criteria for lighting are the focus of this course, covering both theoretical and practical issues.

ARCH 6634-3. Materials and Detailing I: Residential. This course provides students with the opportunity to explore theory and application of materials used in residential interiors. The course focuses on study of composition and characteristics of individual finish materials as well as conventional methods of representing them graphically.

ARCH 6635-3. Materials and Detailing II: Commercial. The goals and parameters of this course are the same as those outlined for Materials and Detailing I; however, the focus will be commercial interiors. Prereq: ARCH 6634.

ARCH 6636-3. Building Technology II. This course is a continuation of Building Technology I. It focuses on the range of building construction systems and techniques that can be organized to achieve specific design intentions. The course provides this framework to organize and research construction documents with specific performance and design criteria. Prereq: ARCH 5530, 5531, 5532.

ARCH 6640-3. Introduction to Computer Graphics. This course provides a hands-on introduction to the personal computer and the disk operating system. The fundamentals of drawing with a computer will be taught with the production of moderately sized drawings. Basic two-dimensional CAD concepts such as symbols and layering will be explored. Students will learn to use a digitizer for input and output graphics to a plotter.

ARCH 6641-3. Computer Applications in Architecture. This course builds upon the basics learned in ARCH 6640. Customizing applications to increase productivity will be stressed. Linking of graphics and text databases through the use of attributes will be investigated. Three-dimensional modeling will be used to visualize the design process.

ARCH 6642-3. Design and Architecture With the Macintosh. This course introduces the Macintosh computer as a powerful exploratory design tool which has the potential for exploration and generation of new architectural ideas and forms.
The Macintosh is seen as an extension or amplification of the human brain. The course does not require the user to learn computer programming or complicated command structures; a non-technical, intuitive, word of mouth, trial and error mode of learning is possible. Once basic skills are mastered, production is immediate. Emphasis is placed on analysis, self-criticism, revision, and refinement of design intentions with the computer tool.

ARCH 6643-3. Advanced Design Applications With the Macintosh. This course builds upon experiences gained from the introductory course, ARCH 6642. The course requires the students to have an extensive knowledge of the Macintosh system. The course will devote the entire semester to work with the environments and developing and attitudes toward environmental and problems of the built environment.

ARCH 6660-3. Human and Social Dimensions of Design. This course focuses on the introduction of basic social and psychological processes relevant to changing environmental conditions, human factors, and problems of the built environment. Emphasis is placed on techniques of exploration and innovation in three-dimensional spatial representation of design and architectural constructions.

ARCH 6683-3. Teaching Methods in Architecture. This course is designed to develop teaching and academic capabilities in the context of architecture. The student works with a faculty member in an instructional context eight hours per week.

ARCH 6686-3. Special Topics. Various topical concerns are offered in architecture history, theory, elements, concepts, methods and implementation strategies, and other related areas.

ARCH 6700-6. Advanced Architectural Design Studio VI. The studio focuses on students' elaboration and substantiation of personal ideas through complex design exercises and by critically addressing the status of contemporary architectural theory. Emphasis is placed on a comprehensive design project that is structured to test students on integration of structural aspects, mechanical systems, site planning, and climate considerations within their design solutions.

ARCH 6701-6. Advanced Architectural Design Studio VII. The final design studio continues the comprehensive approach through a full range of design investigation and strategies at all scales from program and conception to construction detail. Students must demonstrate abilities to synthesize all previous work through an application of a complex architectural design project.

ARCH 6704-6. Architectural Experimentation I. An advanced architectural design studio focusing on design explorations and stressing theorization and development of ideologies in architectural design. Emphasis is placed on experimentation with various art media such as painting, sculpture, music, linguistics, film making, and others.

ARCH 6705-6. Architectural Experimentation II. As a continuation of ARCH 6704, this studio stresses a culminating effort toward synthesis and contribution of original proposal for development of architectural theory. Emphasis is placed on architectural transformation as a major indicator of the original contribution of this studio.

ARCH 6720-3. American Art and Architecture. This course focuses on major developments in American art from 1750-1950. Painting and sculpture, as well as important developments in architecture, will be discussed. The work of such artists and architects as Copley, Peale, Whistler, Cassatt, Hopper, O'Keeffe, Thomas Jefferson, Louis Sullivan, and Frank Lloyd Wright will be studied.

ARCH 6721-3. Art and Architecture of Islam. This course focuses on study and examination of the art and architecture of the Islamic cultures from the death of Muhammad through the 18th century from Spain to India.

ARCH 6722-3. Latin American Art and Architecture. This course focuses on study and examination of the art and architecture of the colonies of Spain and Portugal in the western hemisphere from 1492 to the present.

ARCH 6723-3. Oriental Art and Architecture. This is an introductory survey of oriental art and architecture. The course aims to uncover the relationship between East Asian art and architecture and its accompanying theories.

ARCH 6740-3. Computer Aided Design. The course explores the relationship between design, mathematics, and computation. The concepts of finite mathematics will be introduced using building design examples. Problem-solving methods in design and computation will be explored. The analysis of plan types will be related to topology and geometry; symmetry and combinatorial groups will be introduced. Computer projects and readings will be assigned to explore the concepts.

ARCH 6750-3. Professional Practice. This course introduces the student to the essential elements of professional practice through subject areas such as internship, licensing, services, modes of practice, fees, marketing, documents, specifications, and production procedures. One three-hour lecture per week. Prereq: final year in program or approval of instructor.

ARCH 6840-1 to 3. Independent Study. Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to architecture.

ARCH 6910-6. The Built Environment in Other Cultures II: Field Experience. Students will travel to their respective cities and investigate the agreed upon study proposals. The course intends not only to help students consider their own design and planning attitudes, but also to help them see the world from a more balanced perspective.

ARCH 6930-3. Architecture Internship. This course is designed to provide professional practice experience to students and is composed of eight hours per week in a practicing professional's office during the regular semester. The student is placed in an architectural and/or design office by the school and receives credit instead of pay. Students must complete second year level before taking this course.

ARCH 6931-3. Architecture Internship. This course is designed to provide professional practice experience to students and is composed of eight hours per week in a practicing professional's office during the regular semester. The student is placed in an architectural and/or design office by the school and receives credit instead of pay. Students must complete second year level before taking this course.


Urban Design

A city no longer inhabited, not simply left behind, but haunted by meaning and culture. This state of being haunted, which keeps the city from returning to nature, is perhaps the general mode of the presence or absence of the thing itself in pure language. (Derrida 1978)

Cities are in reality great camps of the living and the dead where many
elements remain like signals, symbols, cautions. When the holiday is over, what remains of the architecture is scarred, and the sand consumes the street again. There is nothing left but to resume with a certain obstinacy the reconstruction of elements and instruments in expectation of another holiday. (Aldo Rossi 1981)

The Urban Design Program at the School of Architecture and Planning is intended to be a non-conventional research program leading to the degree of Master of Architecture in Urban Design. The premise of the program is investigation, exploration, experimentation, and representation of ideas and proposals regarding the development of the city. Unlike the classical mode of inquiry, the Urban Design Program takes a relatively more radical approach to the analysis of architecture of the city. The curriculum is designed for the questioning of the existing connections and searching for alternative ideologies and proposals for the city’s architecture through a structured sequence of lecture and design studios. There are two options of study which extend over a two semester or three semester course of study. There are three curriculum steps involved in these plans. The first step of the curriculum engages the student in studying the fundamentals of present architectural text and dis­tribution of present architectural text and dis­

### Option I: One Academic Year

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**Core Curriculum**

The core curriculum consists of six graduate courses for a total of 21 credit hours. Some students entering the program may be advised to take additional courses depending on their educational backgrounds. The core curriculum consists of the following courses:

- UD 6600 (6) Transformation and Decomposition Studio
- UD 6601 (6) Composition Studio
- UD 6602 (6) City of Exploration and Experimentation Studio (Optional)
- UD 6620 (3) Architecture of the City
- UD 6621 (3) City as an Artifact
- ARCH 6622 (3) Modern Architecture
- ARCH 6623 (3) Investigations in Architecture

**ELECTIVES:**

- LA 5521 (3) History of Landscape Architecture
- URP 5532 (3) Urban Form History
- URP 6680 (3) Urbanization in Developing Countries
- URP 6682 (3) Housing in Developing Countries
- ARCH 6621 (3) History of Architectural Theory
- ARCH 6627 (3) Post-Structuralist Architecture
- ARCH 6628 (3) Theories of Avant Garde
- ARCH 6640 (3) Introduction to Computer Graphics
- ARCH 6641 (3) Computer Applications in Architecture
- ARCH 6642 (3) Design and Architecture with the Macintosh
- ARCH 6643 (3) Advanced Design Applications with the Macintosh
- ARCH 6683 (3) Teaching Methods in Architecture
- ARCH 6720 (3) American Art and Architecture
- ARCH 6721 (3) Art and Architecture of Islam
- ARCH 6722 (3) Latin American Art and Architecture
- ARCH 6723 (3) Oriental Art and Architecture
- ARCH 6740 (3) Computer Aided Design

### Option II: One Year Calendar Year

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**Urban Design Courses**

**U D 6600-6. Transformation Decomposition Studio.** The first studio of a two-studio sequence introduces the process of decomposition in urban structure through analysis of landscape and structures in search of ordinary and non-ordinary elements of the city. The studio then is an attempt to restore immanent conditions—the suspension between origin and effect, between positive and negative elements of urban structure.
UD 6601-6. Composition Studio. This studio builds upon the analytical investigations conducted in the previous semester and explores the process of composition or recomposition in the architecture of the city. Drawing upon deconstructionist theory, the studio presents a challenge to the hegemony of traditional design studios and is a search for authenticity. Considering architecture as text, the studio is a means to represent an invention, an activity drawn from the conditions of architecture of city.

UD 6602-6. City of Exploration and Experimentation Studio. This is an optional independent studio where individual students pursue their individual interests with an emphasis on interaction between architecture and other disciplines. This studio is structured as a cumulative synthesis of knowledge and skills into an original proposal for the betterment of city conditions.

UD 6620-3. Architecture of the City. This course focuses on interpretation of architecture of the city and its landscape, articulation and disarticulation, discontinuity of order, immanence and memory. Drawing from contemporary writers such as Derrida, Barthes, Adorno, Habermas, Heidegger, Husserl, and others, the course examines the questions of replication, representation, and signification in the city.

UD 6621-3. The City as an Artifact. This course focuses on study of ordinary and non-ordinary architecture and its implications to urban context. Beginning by examination of classical representation and refutation, the course attempts to present denial and possibility in architecture by investigating tradition and metaphysics of origins and presence.

UD 6636-3. Special Topics in Urban Design. Various topical concerns are offered in urban design history, theory, elements, concepts, methods, and implementation strategies and other related areas.

UD 6640-1 to 3. Independent Study. Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to urban design.


Landscape Architecture
Program Director: Lois A. Brink

The Landscape Architecture Program offers both first and post-professional Master of Landscape Architecture degrees. The first professional Master of Landscape Architecture (M.L.A.) is fully accredited by the Landscape Architectural Accreditation Board (LAAB) and is recognized by the Council of Educators in Landscape Architecture.

The primary mission of the program is to imbue the student with a design ethic for Landscape Architecture—in its holistic sense of landscape intervention—as a balance or harmony between the abstract and the real, between architecture and landscape, and between art and ecology. The underlying premise or baseline is that the landscape architect strives to design places for people to inhabit, in the artful sense of the word, with a relentless commitment to quality, ethics and appropriateness.

The program prepares the student to enter into the profession of Landscape Architecture with a thorough understanding and capability of making judgments through a design process. The design process is the method by which one can determine the appropriateness and integration of the natural, aesthetic, social and cultural parameters of landscape intervention. It infuses the student with a rigor and discipline necessary to execute, implement, evaluate and critique his or her actions.

More specifically, the objectives of the program are to develop a thorough competence in design, the design process, and knowledge of landscape technology with particular emphasis on exploration, experimentation, and synthesis, and understanding of professional practice including management and professional conduct.

MASTER OF LANDSCAPE ARCHITECTURE I
(First professional degree)

Three year program. The first professional M.L.A. degree requires 90 semester hours and three years of full-time study. The curriculum consists of a core of four related course components: Design, 42 credit hours; History and Theory, 15; Science and Technology, 15; and Professional Practice, 3, totaling 75 credit hours, and 15 semester hours of electives.

The Curriculum—Three Year Program

DESIGN:
42 semester hours

LA 5500 (6) Introduction to Landscape Architectural Design Studio I
LA 5501 (6) Introduction to Landscape Architectural Design Studio II
LA 6600 (6) Landscape Architectural Design Studio III
LA 6601 (6) Landscape Architectural Design Studio IV
LA 6700 (6) Advanced Landscape Architectural Design Studio V
LA 6701 (6) Advanced Landscape Architectural Design Studio VI
LA 5510 (3) Elements of Design Expression and Presentation I
LA 5511 (3) Elements of Design Expression and Presentation II

HISTORY AND THEORY:
15 semester hours

ARCH 5520 (3) Introduction to Design Theory and Criticism
LA 5521 (3) History of Landscape Architecture
ARCH 6620 (3) Architecture in the 18th through 20th Centuries
LA 6670 (3) Plants in Design
LA Theory Elective: 3 semester hours

SCIENCE AND TECHNOLOGY:
15 semester hours

LA 5532 (3) Landscape Technology I
LA 5572 (3) Landscape Technology II
LA 6631 (3) Landscape Technology II
LA 6632 (3) Site Planning Technology Elective: 3 semester hours of computer applications

PROFESSIONAL PRACTICE:
3 semester hours

LA 6750 (3) Professional Practice

ELECTIVES:
15 semester hours

MASTER OF LANDSCAPE ARCHITECTURE II
(Post-professional degree)

Two year program. The post-professional degree program requires 48 semester hours and two years of full-time study.
COURSE SEQUENCE: MASTER OF LANDSCAPE ARCHITECTURE I

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<tr>
<th>COURSE SEQUENCE</th>
<th>DESIGN</th>
<th>HISTORY/THEORY</th>
<th>SCIENCE &amp; TECHNOLOGY</th>
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The core curriculum consists of two groups: Design, 30 credit hours; and History/Theory, 12; for a total of 42 credit hours, and 6 semester hours of electives.

The Curriculum – Two Year Program

**DESIGN:** 30 semester hours

LA 5500 (6) Introduction to Landscape Architectural Design Studio I
LA 6601 (6) Landscape Architectural Design Studio IV
LA 6700 (6) Advanced Landscape Architectural Design Studio V
LA 6701 (6) Advanced Landscape Architectural Design Studio VI
LA 5510 (3) Elements of Design Expression and Presentation I
LA 5511 (3) Elements of Design Expression and Presentation II

**HISTORY AND THEORY:** 12 semester hours

ARCH 5520 (3) Introduction to Design Theory and Criticism

ARCH 5521 (3) Survey of Architectural History

ELECTIVES: 6 semester hours

LA 6622 (3) Visual Quality Analysis
LA 6624 (3) The Built Environment in Other Cultures I: Research Design
LA 6641 (3) Computer Applications in Landscape Architecture
LA 6686 (3) Special Topics in Landscape Architecture
LA 6840 (1-3) The Built Environment in Other Cultures II: Field Experience
LA 6930 (3) Landscape Architecture Internship
ARCH 5540 (3) Design Photography
ARCH 6622 (3) Modern Architecture
ARCH 6623 (3) Post-Structuralist Architecture
ARCH 6627 (3) Studies of Avant Garde History

ARCH 5532 (3) Ancient Perspectival History

COURSE SEQUENCE: TWO YEAR PROGRAM

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<tr>
<th>COURSE SEQUENCE</th>
<th>DESIGN</th>
<th>HISTORY/THEORY</th>
<th>ELECTIVES</th>
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A thesis option [LA 6950 (6): Thesis Research and Programming and LA 6951 (6): Landscape Architecture Thesis] is available primarily for students who are interested in pursuing more advanced academic training in landscape architecture or related fields.
Landscape Architecture Courses

LA 5500-6. Introduction to Landscape Architectural Design Studio I. This introductory studio focuses on the basic strategies and techniques of design production. Students are introduced to architectural design analysis and criticism, and the significance of the elements of design. Emphasis is placed on development of an awareness of the relationship between theory and history in the design process.

LA 5501-6. Introduction to Landscape Architectural Design Studio II. The second introductory design studio continues the examination of the issues raised in the first semester and begins investigation of more complex issues related to building design and landscape. Emphasis is placed on developing a systematic approach to design while simultaneously dealing with the development of theory and intellectual inquiry.

LA 5510-3. Elements of Design Expression and Presentation I. This course covers the basic principles of descriptive geometry (technical drawing). Basic principles of orthographic projection, axonometric projection, perspective, and photographic reproduction methods (portfolio) are examined. Emphasis is placed on defining abstract forms and real objects in terms of line, light, shade, and shadow.

LA 5511-3. Elements of Design Expression and Presentation II. This course builds upon the basic principles and issues in the previous semester. Craft and precision are stressed, but with an emphasis toward design articulation and individual expression. Students are introduced to a wide range of compositional techniques and methods and selection of media and materials. The subjects covered are: drawing as analysis; drawing as representation; principles of color interaction; and means of representing architectural space in terms of color, light, shade, and shadow gradation and value distinction.

LA 5521-3. History of Landscape Architecture. This course investigates architectural thought from antiquity to the present. It begins with a review of Greek ideals and then proceeds through an appreciation of landscape and nature as essential cultural constituents - with a survey of major themes such as renaissance humanism, enlightenment, rationalism, romantic historicism, neo-medievalism, the varieties of miderism, neo-electicism, and the most recent directions in landscape and garden design.

LA 5532-3. Landscape Technology I. This course will address the fundamental techniques of landscape architecture, including drafting skills, surveying and grading, and the natural systems as they affect construction. The application of road design and utility systems for site development will also be covered.

LA 5572-3. Landscape Ecology. This course is focused on the study of physiography, cultural factors, and aesthetic criteria in relation to landscape, spatial organization, and urban and regional structure. Emphasis is placed on continuity and change in and ecology of both natural and man-made landscape.

LA 6600-6. Landscape Architectural Design Studio III. The first intermediate studio focuses upon the exploration of landscape design and integration of objects. Emphasis is placed on exploration of landscape and experimentation with spatial organization and manipulation of context.

LA 6601-6. Landscape Architectural Design Studio IV. The second intermediate studio sequence focuses on larger scale development projects dealing with more complex spatial arrangement of buildings and other objects within the landscape, functional needs and requirements within the framework of a variety of social, economic, and physical constraints.

LA 6620-3. Landscape Architecture Theory and Criticism. This course focuses on exploration and assessment of the current state of theory in landscape architecture and related design disciplines, and the ideas undergoing contemporary design approaches. Narrative and explanatory theories are the objects of study. Emphasis is placed on history and pedagogic theories and their relationships to other disciplines such as art, ecology, geography, architecture, and anthropology.

LA 6622-3. Visual Quality Analysis. This course introduces students to a range of philosophies, methods, and techniques in visual landscape analysis. Emphasis is placed on application of methods and techniques to urban and regional context and scale, and visual impact assessment and simulation.

LA 6624-3. The Built Environment in Other Cultures I. Research Design. This course intends to broaden students' perspectives by asking them to examine design within another culture. Each student will prepare a proposal of study including a statement of the problem to be addressed, the type of field research to be undertaken, and the nature of the report produced.

LA 6631-3. Landscape Technology II. This course is a continuation of LA 5532 and focuses on the study of materials and methods employed in construction of site features and evolution of palette, techniques and theory of detailed design including pavements, fences, walk, stairs, revetments, basins, and fountains.

LA 6632-3. Site Planning. The course focuses on the site planning process including research and data gathering, data analysis and synthesis, design analysis and its relationship to building program and concept, and design synthesis of site and preparation of site plan. Emphasis is placed on design through grading, representation, manipulation and calculation of road work, utilities and other site features. Vertical and horizontal alignment, earthwork and cost computation, and integration with existing and proposed features or systems are all covered.

LA 6641-3. Computer Applications in Landscape Architecture. The course introduces problem solving methods, and the relationship between those methods, and the application of a computer to design problems. Introductory problems are given in basic using the graphics package, a high-level language such as pascal is used to explore language in more depth, and to conclude, a series of assignments introduces the graphics unit or high-level language. Assignments in programming cad problems are required.

LA 6670-3. Plants in Design. This course focuses on the study of design methods used in landscape architecture. Formal design principles, spatial sequencing, and plant functions are applied in design studies, based on botanical aesthetic traits and physical requirements of a wide variety of plant material.

LA 6686-3. Special Topics in Landscape Architecture. Various topical concerns are offered in landscape architecture history, theory, elements, concepts, methods, implementation strategies, and other related areas.

LA 6700-6. Advanced Landscape Architectural Design Studio V. This studio will focus upon the students' elaboration and substantiation of personal ideas through complex design exercise which critically address contemporary landscape architectural theory. Emphasis is based upon a comprehensive landscape design project structured to test student ability to investigate ecological, socio-cultural aesthetics and dimension in their design solutions.

LA 6701-6. Advanced Landscape Architectural Design Studio VI. The final studio is comprehensive in its approach. The major goal is to present a full range of
complex design investigations and implementation strategies at various scales, while allowing the students to demonstrate their ability to synthesize all previous academic work.

I. A 6750-3. Professional Practice. The course focuses on studies in the professional practice of landscape architecture and related professions, and case problems in initiating and managing a professional practice. It explores the essential elements of professional practice and equips students with the fundamental knowledge and skills requisite to an understanding of, and participation in, the conduct of practice in landscape architecture. The course covers organization of the landscape office, professional services of landscape architects, fees structures and fee management, contracts, legal rights and responsibilities, and management.

I. A 6840-1 to 3. Independent Study. Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to landscape architecture or urban design.

I. A 6910-4. The Built Environment in Other Cultures: Field Experience. Students will travel to their respective cities and undertake the agreed upon study proposals. The course intends not only to help students consider their own design and planning attitudes, but also to help them see the world from a more balanced perspective.

I. A 6930-3. Landscape Architecture Internship. This course is designed to provide professional practice experience to students, and is composed of eight hours per week work in a practicing professional's office during the regular semester. The student is placed in a landscape architectural and/or design office by the school and receives credit instead of pay. Students must complete the second year level before taking this course.


Urban and Regional Planning

Program Director: Peter V. Schaeffer

Urban and regional planning in the United States and other countries is involved in activities aimed at shaping the pattern of human settlements and providing housing, public services, and other crucial support systems that help support a decent urban living environment. Planning encompasses not only a concern for the structure and image of the built environment, but also a desire to harness logical forces that give meaning to the everyday lives of men and women in residential, work, and recreational settings.

More specifically, urban and regional planning is concerned with: identifying social needs and designing and providing services and facilities to meet those needs; anticipating change and its impact on how people can and do live; understanding the way plans are made, decisions implemented, and actions evaluated and the means by which these processes can be improved; stimulating, guiding, and influencing actions of the private sector with respect to land use and land use transitions in urban, suburban, and rural areas; identifying potentially adverse impacts of human activities on the natural environment and mitigating those impacts; designing the city and the surrounding region to facilitate activities in which people need and desire to engage.

The Urban and Regional Planning Program at the University of Colorado at Denver is designed to prepare students for professional practice in urban and regional planning as well as for more advanced academic training in planning and related fields. The degree of Master of Urban and Regional Planning (M.U.R.P.) is awarded after successful completion of a course of study normally requiring about two years of full-time course work.

The objectives of the Urban and Regional Planning Program are: to clarify the behavioral and perceptual sources of urban and regional problems; to foster the appropriate use of policy, planning, design, and legal devices for creating urban and regional environments responsive to human needs and ecological principles; and to develop methods for evaluating urban programs, policies, and plans which have important human and natural environmental consequences.

MASTER OF URBAN AND REGIONAL PLANNING

The Urban and Regional Planning Program offers a curriculum leading to the degree of Master of Urban and Regional Planning (M.U.R.P.), which requires two years of full-time study and a minimum of 51 credit hours. The M.U.R.P. degree program is accredited by the Planning Accreditation Board. It consists of a core of 27 semester hours of courses in: Theory, Planning Methods, Spatial Analysis, Planning Law, History, Planning Studio, Site Planning, and at least 24 semester hours of elective courses.

All planning courses qualify as electives. The student should select courses, however, that build on each other and together form a strong specialization. The Urban and Regional Planning Program requires that students see an advisor at least once a semester before registration to obtain approval for the course selection. Each student is assigned a member of the faculty as an advisor and mentor.

The particular strength of the Urban and Regional Planning Program is Physical Planning with emphasis on Environmental Planning and Land Development. Students are encouraged to consider appropriate courses in the Landscape Architecture Program to achieve greater skills and depth of knowledge. A dual Master of Urban and Regional Planning and Master of Landscape Architecture degree is offered.

Applicants to the Urban and Regional Planning Program are expected to present their application materials in a portfolio. The portfolio should include a resume which describes the applicant’s educational and professional background, a statement of professional goals and objectives, a list of courses that the applicant has taken which relate to planning, and a copy of a student or professional project or paper with a note explaining why the

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<tr>
<th>COURSE SEQUENCE</th>
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Thesis) is available primarily for students who are interested in pursuing more advanced academic training in planning or related fields.

Core Courses

URP 5501 (3) Planning History and Theory
URP 5510 (3) Planning Methods I
URP 5511 (3) Planning Methods II
URP 5520 (3) Urban Spatial Analysis
URP 5530 (3) Planning Law
URP 6630 (4) Planning Studio I
URP 6631 (4) Planning Studio II
URP 6632 (1) Preparation forProfessional Certification
LA 6632 (3) Site Planning

A thesis option (URP 6950 Thesis Research and Programming and URP 6951 Thesis) is available primarily for students who are interested in pursuing more advanced academic training in planning or related fields.

Specialized Courses

The elective courses enable students to explore in depth an area of special interest. Students should build on the expertise which they already possess. This can be done by learning about a related specialty, or by increased specialization in an already existing area of expertise. The Urban and Regional Planning faculty have particular strengths in Urban Economic Development, Land Use, Environmental Planning, and Real Estate and Land Development. Students must take at least 24 hours of elective courses.

Urban and Regional Planning Courses

URP 5500-3. Introduction to Urban and Regional Planning. This course focuses on the principles of urban and regional planning, theories of planning, community organization, basic techniques, changing philosophies in modern society, and the process of shaping community form.

URP 5501-3. Planning History and Theory. This course provides an overview of planning history and theory. The philosophical, political, and economic roots of the various theories are discussed. Ideas are placed in the context of the planning profession's history and its present aims, interests, and ethics.

URP 5510-3. Planning Methods I. This course focuses on the application of statistical, quantitative, and mathematical techniques, and computer applications for urban and regional planning and policy development. Major topics include types of data, sampling, basic probability distributions, hypothesis testing, regression and correlation, and an introduction to multi-variate and cluster analysis. Applications in planning and development are emphasized.

URP 5511-3. Planning Methods II. This course continues the development and applications of techniques introduced in URP 5510 as well as other planning methods, models, and techniques. These include physical, social, and economic models, urban land use and development models, decision-making techniques, and linear and dynamic programming. Prereq: URP 5510 or consent of instructor.

URP 5520-3. Urban Spatial Analysis. This course is an examination of the spatial structure of the urban system. The urban system is analyzed in terms of the "system of cities" and "city as a system." Major topics discussed include the economic theory of the origin of the city, the rank-size and primate distributions, the location pattern and hierarchical structure of cities, functional classification of cities, urban growth and economic base, movement of population within and between cities, spatial pattern of land use and economic activities, spatial pattern of urban population density, and urban social space and urban cognition.

URP 5530-3. Planning Law. This course focuses on the legal setting for urban and regional planning in the United States and major constitutional issues in the effectuation of planning policy. Contemporary controversies are put into the larger context of attempts by the judicial system to redefine the balance between individual rights and governmental power in an increasingly weakened society.

URP 5532-3. Urban Form History. An analysis of urban physical form from the origin of cities to the present. The emphasis is on cities of western civilization and American urban planning. Major shifts in urban ideas, architecture, transportation, landscapes, and energy systems are discussed and evaluated using a slide-lecture format.

URP 5533-3. Urban Form Theory. A description and analysis of contemporary schools of thought on urban physical form. Theories will be evaluated according to the accuracy of their explanations of present urban form, the quality of their images of future form, and the practicality of their strategies for implementing their ideal using a slide/lecture/discussion format.

URP 6624-3. The Build Environment in Other Cultures I: Research Design. This course intends to broaden student's perspective by asking them to examine design within another culture. Each student will prepare a proposal of study including a statement of the problem to be addressed, the type of field research to be undertaken, and the nature of the report produced.

URP 6630-4. Planning Studio I. This course focuses on plan design in urban and regional planning and explores basic concepts, techniques, and issues related to urban planning, urban design, site planning, and environmental awareness.

URP 6631-4. Planning Studio II. The focus of studio II is on plan making related to urban and regional planning. An understanding of the plan-making process is emphasized. Students will have direct experience with the various steps in planning, including data-gathering, goal-setting, identification of alternatives, analysis, synthesis, and presentation of the plan. The plan may be for a city sector, a neighborhood, an entire community, a region, or it may be a policy plan. Where possible, students will work with an actual client. Prereq: URP 6630.

URP 6632-1. Preparation for Professional Certification. This course is taken in the student's final semester before graduation. It provides a comprehensive review of the planning literature and practice. The course coverage follows that of the American Institute of Certified Planners (AICP) examination. Only open for planning students in their last semester or consent from the program director.

URP 6640-3. Community Development Process. This course introduces community development, a field closely allied with planning, in its devotion to working with people to strengthen their communities in accordance with locally determined goals. Emphasis is placed on understanding, groups, organizations, and communities and on developing skills in such areas as community analysis, goal setting, group facilitation, and problem solving.

URP 6641-3. Social Planning. An increasingly important specialty in contemporary planning practice is social planning. This course covers the process of formulating public policies and designing, implementing, and evaluating programs in such areas as social services, housing, health care, employment, and education. Attention is given to the historical perspective and the present-day social and political context within which social policy formulation and social planning occurs.
URP 6642-3. Neighborhood Planning. An introduction to small area planning including survey of neighborhood and community theory, examination and critique of research and analytical techniques involved in neighborhood planning. Examines and analyzes existing plans of local neighborhoods.

URP 6649-3. Environmental Planning I: Ecology. This course studies the physiography, cultural factors, and aesthetic criteria in relation to landscape and spatial organization and structure. It will cover data sources and interpretation, and it will look at environmental factors in development and siting analysis. Prerequisite: URP 5510 or consent of instructor.

URP 6650-3. Environmental Planning II: Policy and Law. This course provides a comprehensive perspective on environmental planning policy. It focuses on major environmental issues and problems, methods of evaluation, and legislative responses. Prerequisite: URP 5530 or consent of instructor.

URP 6651-3. Environmental Impact Assessment. The objective of this course is to provide the foundation for understanding the environmental impact assessment process, its legal context, and the criteria and methods for procedural and substantive compliance. Prerequisite: URP 5530 or consent of instructor.

URP 6652-3. Growth Management. This course examines environmental and land regulations such as zoning, subdivision controls, and growth management systems in the context of public policy. Emphasis is placed on case studies, the analysis of past and present practices, the improvement of existing systems, and the design of new regulatory systems. Prerequisite: URP 5530 or consent of instructor.

URP 6653-3. Natural Resources Planning and Management. This course focuses on the study of the economic organization and use of natural resources. It covers the study of property rights and their impact on resource use, optimal depletion of non-renewable and use and management of renewable resources, applications to fisheries, forests, mineral resources, etc. As well as developing criteria for evaluation of environmental amenities; explores conflicts between growth and environmental quality.

URP 6660-3. Real Estate Development Process. This course is a detailed analysis of components of the real estate process and its relationship to the design profession and other key participants. Students will learn what variables are within the real estate development business, how they interrelate, and why projects succeed or fail.

URP 6661-3. Real Estate Development Finance. This course focuses on financial analysis of real estate investments. The course covers topics including measures of value, capitalization rate, capital budgeting, debt and equity markets, and taxation. Cash flow and appraisal techniques, complex deal structuring, innovations in debt financing, syndications, tax shelters, tax exempt financing, and micro-computer applications are also covered.

URP 6662-3. Real Estate Market Analysis. This course focuses on examination of technologies of market analysis. Topics include business and construction cycles, regional and urban growth trends, restructuring of urban space, commercial and industrial location theories, and demographic analysis and projection techniques. Prerequisite: URP 5510 and 5511, or consent of instructor.

URP 6664-3. Fiscal Impact Analysis. This course is designed to provide an introduction to fiscal impact analysis procedures to students interested in the land development process. Several methodologies will be reviewed and assessed for their relevance in diverse circumstances. Prerequisites: URP 5510 and 5511, or consent of instructor.

URP 6670-3. Urban Economic Development. This course is an analysis of the public/private partnership in urban economic development including analysis of potentials, problems, and projects; financing urban economic development through federal grant programs, tax increment financing and other means; and economic theory of urban development.

URP 6671-3. Regional Economic Development. This course is an analysis of regional patterns and processes of economic development. Theories and models for location patterns and processes of economic activities; labor, industrial, and commercial site requirement; and economic development and growth strategies are emphasized. Prerequisite: URP 5520, or consent of instructor.

URP 6672-3. Urban Labor Market. This course provides a study of the organization and functioning of urban labor markets and covers labor market segmentation, human capital theory, labor mobility, labor market signaling, and discrimination in labor markets. (Offered infrequently.)

URP 6673-3. Transportation Planning I: Transport Network Analysis. The focus of this course is on the examination of several important aspects of the transport network: accessibility and connectivity of nodes and linkages and the volume and direction of flow of a transport network. Descriptive, predictive, and planning methods and models discussed include graph theoretical measures, connectivity matrices, gravity model, abstract mode model, entropy-maximization, trip generation model, and flow allocation models. Prerequisites: URP 5510, or consent of instructor.

URP 6674-3. Transportation Planning II: Urban Transportation Planning. This course is a follow-up of the transport network analysis and involves an examination of major issues of urban transportation in the U.S. These include the role of transportation in urban development, the urban transportation system, relationship between land use planning and transportation planning, urban transportation planning process, and selected case studies. Prerequisites: URP 5511 and 6673, or consent of instructor.

URP 6675-3. Planning and Public Finance. This course focuses on recent trends in financing local governments, revenue and expenditure analysis, budgeting for local governments with particular emphasis in the capital improvement budget, financing capital improvements through bond issue, and capital improvement and its relationship to long-term planning.

URP 6676-3. Urban Housing. This course involves an examination of planning and other aspects of urban housing, focusing primarily on U.S. Urban housing conditions with some references to international conditions and comparisons. Major topics of the course include aggregate trends and patterns, housing in spatial context, the allocation process of housing markets and submarkets (supply/finance, demand/mobility/demographic change), housing problems and failures (substandardness, inequitable distribution, special group needs, segregation and discrimination, market problems), the role of government, and alternative approaches.

URP 6680-3. Urbanization in Developing Countries. A description, analysis, and evaluation of urbanization and planning in less developed countries. The special problems of planning, housing, transportation, environmental quality, and economic development in cities of these countries are addressed. Comparisons are made among cities of third-world countries and between third-world countries and first-world countries.

URP 6682-3. Housing in Developing Countries. This course examines housing problems in developing countries and explores alternative policies, programs, and plans. Emphasis is placed on population growth and the impact housing and
urban development, housing demand, shelter, and services for the urban poor, the squatting and squatter-built housing, and comparison of government policies and programs addressing housing problems.

**URP 6686-3. Special Topics in Urban and Regional Planning.** Various topical concerns are offered in urban and regional planning, theory, concepts, methods, case studies, and practice.

**URP 6840-1 to 3. Independent Study.** Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to urban and regional planning.

**URP 6910-6. The Built Environment in Other Cultures: Field Experience.** Students will travel to their respective cities and undertake the agreed upon study proposals. The course intends not only to help students consider their own design and planning attitudes, but also to help them see the world from a more balanced perspective. Prereq: URP 6624.

**URP 6930-3. Planning Internship.** This course is designed to provide professional practice experience to students in urban and regional planning. The emphasis is on actual work experience in settings with client groups as the students assist them in determining solutions to their problems. Program director's approval is required.

**URP 6950-3. Thesis Research and Programming.** Prereq: minimum of 24 credit hours earned toward completion of master of urban and regional planning degree.

**URP 6951-3. Urban and Regional Planning Thesis.**
College of Business and Administration and Graduate School of Business Administration

Acting Dean: Gary A. Kochenberger
Associate Dean for Faculty:
Jean-Claude Bosch
Associate Dean for Academic Programs:
Peter G. Bryant
Office: 1250 14th Street
Telephone: 595-4007

Director of the Executive Health Administration Program:
John P. Young
Director of the Executive M.B.A. Program:
John P. Young
Academic Director, Health Administration Program:
Richard W. Foster

Faculty

Professors: Marcelle V. Arak (Finance), Gordon G. Barnewall (Marketing), Wayne F. Cascio (Management), Lawrence F. Cunningham (Marketing), Michael A. Firth (Accounting), H. Michael Hayes (Marketing and Strategic Management), Gary A. Kochenberger (Operations Management), James R. Morris (Finance), William D. Murray (Information Systems), Bruce R. Neumann (Accounting and Health Administration), Edward J. O'Connor (Management), Donald L. Stevens (Finance), Dean G. Taylor (Finance).

Associate Professors: W. Graham Astley (Management), Jean-Claude Bosch (Finance), Peter G. Bryant (Management Science and Information Systems), Kang Rae Cho (Management and International Business), Edward J. Conry (Business Law and Ethics), E. Woodrow Eckard, Jr. (Business Economics), Richard W. Foster (Finance and Health Administration), James H. Gerlach (Information Systems), Jahangir Karimi (Information Systems), Dennis F. Murray (Accounting), John C. Ruhanka (Management and Business Law), Clifford E. Young (Marketing), Raymond F. Zammuto (Management).

Assistant Professors: Stephen P. Allen (Accounting), Ajeoyi Banerjee (Finance), Ben-Hsien Bao (Accounting), Kenneth L. Bettenhausen (Management), Heidi Boerstler (Health Administration), Lloyd Brodsky (Information Systems), Richard E. Cook (Finance), Marlene C. Fiol (Management), Kenneth A. Hunt (Marketing), Susan M. Keaveney (Marketing), Deborah L. Kellogg (Operations Management), Sarah Kovoor (Management), Feng Yang Kuo (Information Systems), Moonkyu Lee (Marketing), Chandrasekaran Rajam (Management), Manuel G. Serapio, Jr. (International Business), Marlene A. Smith (Quantitative Methods).

Senior Instructors: Cindy Fischer (Accounting), Charles M. Franks (Quantitative Methods), Gary L. Giese (Management), Robert E. Moore (Marketing), Paul J. Patinka (Management), Barbara A. Pelter (Finance), Jerry Turner (Accounting), John Turner (Finance),

Lecturer: Franklin E. Grange (Operations Management)

INFORMATION ABOUT THE COLLEGE

Located in the heart of the Rocky Mountain business community, the College of Business and Administration at the University of Colorado at Denver provides its students with the knowledge and skills necessary to become effective, responsible business professionals. This level of excellence in higher education is achieved by bringing together nationally recognized faculty and highly motivated, mature students in an intellectually challenging academic environment.

CU-Denver's College of Business is a "research institution," and our faculty are nationally recognized for their contributions to scholarly research. The information contained in university textbooks is first conceived through faculty research and is usually published in textbooks about six years later. Thus, a research-oriented faculty is writing and teaching concepts years before they are typically seen in textbooks. Accordingly, our students have the opportunity to be on the leading edge of business management theory and practice.

Our class schedules offer flexibility to meet the needs of full- and part-time students, with both day and evening classes. Whether you are an experienced working professional seeking an advanced degree, or preparing for a new career in the business world, you will gain the knowledge necessary to succeed in today's challenging business environment.

CU-Denver's College of Business can give you an edge over your competition.

College of Business and Administration

Educational Goals

CU-Denver's College of Business and Administration defines the goals of its degree program as follows:

1. The refinement of basic skills essential for success in business; these include writing, speaking, calculating, computing, making high quality decisions, and managing others.

2. The transmission of knowledge essential for success in business. This includes a broad understanding of our social, economic, ethical and political systems derived from education outside the college. Learning within the college, common to all students, focuses on mastery of accounting, finance, marketing, information systems, business law, quantitative methods, and production.

3. The development of professional views appropriate to fulfilling the manager's responsibility to self, colleagues, employer, and society.

Faculty

Our nationally recognized faculty is vigorous and enthusiastic about their teaching and research. They hold degrees from the nation's leading business schools, such as Berkeley, Harvard, Stanford, University of Chicago, University of Pennsylvania, UCLA, and Yale. Many of them also bring years of valuable experience in private industry. Their interdisciplinary expertise, academic achievements, scholarly research, and business
experience provide students with a dynamic learning environment.

Students

Unlike the students at a traditional college campus, many of our students are adult, working professionals who maintain full-time employment. Their success and experience enrich class discussions and interactions among students. Although a high percentage attend evening classes, a significant number offered during the day. Following the dentists. Although a high percentage attend success and experience enrich class est in the region, the student body is are full-time students attending classes admission standards are among the high­

University schools of business—the American Assembly of Collegiate Schools of Business School cares about the quality of its program.” In addition, many national fellowship programs accept only students from accredited programs.

In a similar manner, our program in health administration is accredited by the Accrediting Commission on Education for Health Services Administration (ACEHSA). This agency ensures that health administration programs meet demanding requirements for quality education in the health administration area.

Accreditation

While there are approximately 800 recognized schools of business nationwide, fewer than one third are accredited by the national accreditation agency for university schools of business—the American Assembly of Collegiate Schools of Business (AACSB). CU-Denver’s College of Business is one of the few schools in the state accredited by the AACSB. Business Week wrote recently, “Today, just having the degree isn’t as important as where you get it… As corporations become savvier buyers of… talent, they are giving more weight to the AACSB seal… Accreditation shows that a Business School cares about the quality of its program.” In addition, many national fellowship programs accept only students from accredited programs.

Cooperative Education

Cooperative Education is a program designed to provide students with practical work experience in a business setting. Through Co-op, students put classroom education into use. Many variables contribute to an individual’s success. On-

the-job experience is one of those variables. Cooperative Education provides students with first-hand experience in a real job setting.

HOW CO-OP WORKS

Working with the College of Business and Administration, the CU-Denver Center for Internships and Cooperative Education places business students as paid Co-op trainees with corporations, businesses, or government agencies in positions that complement their academic work. Many Co-op positions lead to permanent career appointments upon graduation.

ELIGIBILITY FOR PLACEMENT

Cooperative Education is open to all students who have completed their freshman year, have maintained a grade-point average of 2.5, and have completed at least 12 hours of course work at CU-Denver (6 hours for graduate students). Some employers have additional requirements, i.e., U.S. citizenship, willingness to travel, and completion of specific course work.

Scholarships and Financial Aid

Many programs for financial aid are administered by the Office of Financial Aid. Call 556-2886 for detailed information. In addition, the College of Business awards some departmental and general scholarships. The amounts of the awards and the number of awards vary each year. For additional information, contact the College of Business, 595-4007.

Each year, a number of undergraduate students are awarded Deans’ Scholarships, Colorado Scholarships, and Regents Scholarships. These provide financial support for a portion of the students’ tuition and fees.

The Purchasing Management Association of Denver awards an annual scholarship to students interested in careers in purchasing, and the Colorado Chapter of the American Production and Inventory Control Society awards up to two annual scholarships to students interested in careers in operations management. For information contact the operations management faculty advisor in the College of Business.

Graduate tuition awards are available to students admitted to the Graduate School of Business Administration, based on a number of factors including academic performance. For additional information contact the Graduate Programs Office at 628-1276.

Student Organizations

Opportunity for association with other College of Business and Administration students in varied activities intended to stimulate professional interest and to give recognition to scholastic attainment is provided by the following student organizations:

• Beta Gamma Sigma—national honorary scholastic fraternity in business
• CPA—Colorado Society for Personnel Administration (student chapter) for students interested in personnel or industrial relations
• CUAMA—student chapter of the American Marketing Association
• CU Venture Network—campus chapter of the Association of Collegiate Entrepreneurs, open to all CU-Denver students
• HASO—Health Administration Student Organization
• MBA/MS Association—University of Colorado at Denver association of master’s students in business
• Phi Chi Theta—national professional business and economics fraternity
• Sigma Iota Epsilon—professional and honorary management fraternity
• SAS—Society of Accounting Students

Institute for International Business

The Institute for International Business was created in August 1988 to help stimulate new business ventures through partnerships with foreign business schools and executives. It has three goals:

• To collaborate with business and government in promoting international economic development opportunities for Colorado and the Rocky Mountain region.
• To provide hands-on training to foreign executives doing business with American firms.
• To support research on competitiveness issues in the global economy of the 1990’s.

The Institute will offer programs for senior management in business and government. The programs will identify and interpret trends affecting business in the global marketplace and the skills needed to conduct business in these markets. The programs also will put senior managers in contact with internationalists who are shaping the political, economic, and social environment for international business.
GENERAL ACADEMIC POLICIES

Academic policies which apply to all CU-Denver students are described in the General Information section of this catalog. The policies described below apply to both undergraduate students in the College of Business and Administration and graduate students in the Graduate School of Business Administration. Policies applying separately to undergraduate and graduate students are described under separate headings.

Each student is responsible for knowing and complying with the academic policies and regulations established for the College. The College cannot assume responsibility for problems resulting from a student's failure to follow the policies stated in this catalog. Similarly, students are responsible for all deadlines, rules, and regulations stated in the Schedule of Classes.

Academic Ethics

Students are expected to conduct themselves in accordance with the highest standards of honesty and integrity. Cheating, plagiarism, illegitimate possession and disposition of examinations, alteration, forgery, or falsification of official records, and similar acts or the attempt to engage in such acts are grounds for suspension or expulsion from the University. Also, actions which disrupt the administrative process, such as misrepresentation of credentials or academic status, other forms of deception, or verbal abuse of College staff are grounds for suspension or probation. All reported acts of dishonesty must be referred to the College of Business Committee on Student Faculty Relations. In particular, students are advised that plagiarism consists of any act involving the offering of the work of someone else as the student's own. It is recommended that students consult with the instructors as to the proper preparation of reports, papers, etc. in order to avoid this and similar offenses.

Admission to Business Classes

Admission to business classes is limited to students who have been admitted to the business program, and to other students as described in the separate undergraduate and graduate policy sections. The course admission criteria are designed to meet a number of objectives:

1. To assure access to business courses for students seeking a business degree.
2. To serve students in other colleges who have business-related education objectives or requirements.
3. To service non-degree students who have specific career or education goals. Please refer to the Schedule of Classes each term for course availability.

Attendance Regulations

Students are required to attend classes on a regular basis. Absences must be arranged with the instructor and must conform with the instructor's policy on attendance.

Prerequisites

Students are expected to know and fulfill all prerequisite requirements, including any prerequisite information when registering. The College reserves the right to administratively drop students who enroll without the correct prerequisites. Generally, students who are administratively dropped will not receive tuition refunds.

Course Numbering

The course numbering system used at the University of Colorado at Denver identifies the class standing required for enrollment. Students are expected to take 1000 level courses in their freshman year, 2000 level courses in their sophomore year, 3000 level courses in their junior year and 4000 level courses in their senior year. Courses at the 5000 and 6000 level are restricted to graduate business students.

Adding and Dropping Courses

See the General Information section of this catalog for the University-wide drop/add policies.

Withdrawal

See the General Information section of this catalog for University-wide withdrawal policies. Note that the College of Business normally requires instructors' signatures on all withdrawal forms before the Dean's approval is granted.

Administrative Drop

The College reserves the right to administratively drop students who are incorrectly enrolled in business courses. Instructors also may recommend to the College of Business and Administration office that students who fail to meet expected course attendance or course prerequisites be dropped from the course. Generally, students who are administratively dropped will not receive tuition refunds.

Appeal Procedure

Students should contact a business advisor in the College of Business and Administration office for appeal and petition procedures pertaining to rules and regulations of the College.

General Grading Policies

Plus/Minus Grading. College of Business faculty have the option to use plus/minus grading. For example, B+ corresponds to 3.3 credit points (for each semester hour), B− corresponds to 2.7 credit points.

Incomplete Grades. The only incomplete grade given in the College is IF. An IF grade is assigned only when documented circumstances clearly beyond the student's control prevent the student from completing course requirements (exams, papers, etc.). Generally, students must make up the missing work and may not retake the entire course. Students should not register for the class a second time but should make up the work with the instructor giving the IF. All IF grades must be made up within one year, or the IF will be automatically changed to the grade of F.

Also, any such grades must be completed and recorded at the Office of Admissions and Records no later than four weeks prior to graduation. The student is responsible for contacting the instructor concerning the removal of incomplete grades.

Grade Changes. Grades as reported by instructors are final. Grade changes will be considered only in cases of documented clerical errors and when a student is making up an incomplete grade (IF). All changes must be made within one year after the course has been taken unless highly unusual circumstances can be documented and the change has been approved by the Undergraduate Appeals Committee for undergraduate courses, or the Graduate Appeals Committee for graduate courses. Normally, grade changes will not be considered for any circumstances after three years.

ACADEMIC PROGRAMS

A carefully designed curriculum to prepare students for success in business management is available for the student
seeking either an undergraduate or graduate degree. The College offers courses leading to the Bachelor of Science (Business Administration), Master of Business Administration (M.B.A.), and the Master of Science (M.S.) degrees. The particular programs offered are:

### Areas of Emphasis (B.S. in Business Administration)
- Accounting
- Finance
- Human Resources Management
- Information Systems
- International Business
- Management
- Marketing
- Operations Management

### Graduate Programs
- Master of Business Administration (M.B.A.)
- Master of Science in Accounting
- Master of Science in Finance
- Master of Science in Health Administration
- Master of Science in Information Systems
- Master of Science in Management and Organization
- Master of Science in Marketing

### Executive Programs
- Master of Business Administration for Executives
- Master of Science in Health Administration for Executives

### UNDERGRADUATE DEGREE PROGRAMS

**Associate Dean:** Peter G. Bryant  
**Program Coordinator:** Nancy Reed

The undergraduate curriculum leading to the Bachelor of Science (Business Administration) degree is intended to help the student achieve the following general objectives:

1. An understanding of the activities that constitute a business enterprise and the principles underlying administration of those activities.
2. The ability to think logically and analytically about the kind of complex problems encountered by management.
3. Facility in the arts of communication.
4. A comprehension of human relationships involved in an organization.
5. Awareness of the social and ethical responsibilities of those in administrative positions.
6. Skill in the art of learning that will help the student continue self-education after leaving the campus.

### Undergraduate Admissions

**Telephone:** 628-1277

**Admission of Freshman Students.** Freshman applicants must have completed the college preparatory curriculum in high school, graduated in the top 25% of their high school class, and achieved a score of at least 26 on the ACT or 1100 on the SAT. See the General Information section of this catalog for further information on freshman admission.

**Admission of Transfer Students.** Applicants who have completed work at other collegiate institutions should review the information on transfer students in the General Information section of this catalog. In addition to University policies, the College of Business and Administration evaluates course work to determine its appropriateness for the degree of Bachelor of Science (Business Administration). Students who have completed more than 24 semester hours of transferable course work are evaluated for admission on the basis of their college grade-point average (GPA) without regard to their high school performance. To be automatically admitted, students must have a 3.0 overall GPA in the courses which would apply to the degree, Bachelor of Science (Business Administration), and a 2.0 overall GPA in business courses. Students with less than 3.0 overall will be admitted if they have a 3.0 in the last 24 semester hours of applicable course work, a 2.0 overall GPA in business courses, and at least a 2.0 overall GPA in courses applying to the degree.

Students who do not meet either of these admission standards, but with a 2.6 in the last 24 hours of applicable work, are pooled and ranked on the basis of their GPA in the last 24 hours. Pooled applicants are offered admission as space is available. For information about specific policies on transfer of credit, consult an undergraduate business program specialist.

**Intra-university Transfer.** Students who want to transfer to the College of Business and Administration from another college or school of the University of Colorado at Denver must formally apply at the College of Business office. Transfer deadlines are August 1 for Fall Semester, December 1 for Spring Semester, and May 1 for the Summer Term.

Students will be evaluated **only** on course work that applies to the business degree program. Generally, this will exclude course work of a technical or vocational nature and courses in activity PE and remedial subjects. Students who have completed at least 24 applicable semester hours will be evaluated on their college work; students with fewer than 24 transferable hours will be evaluated on the basis of both high school and college work.

Students will be **considered** for admission on either their overall GPA in applicable course work from CU and all previous institutions or on their last 24 hours. Applicants with less than a 2.0 GPA in business courses (from CU or other institutions) and overall CU GPA of less than 2.0 will be denied admission even though they meet the minimum requirements for consideration.

Students will be **automatically admitted** to the College of Business if they have an overall GPA of 3.0 or an overall GPA of 3.00 on their last 24 hours. All other applicants meeting the minimum requirements for admission as stated above will be pooled and ranked on the basis of their GPA in the last 24 hours. Pooled applicants will be offered admission as space is available.

To apply for an intra-university transfer, students must submit an Intra-University Transfer form and CU-Denver transcripts to a business program specialist. Transfer forms are available at CU-Denver Admissions or the College of Business office; transcript request forms are available at CU-Denver Records. The transcript must include the student’s most recent semester at the University. Students with previous course work from other institutions are also required to submit a copy of their transfer credit evaluations (advanced standings).

**Former Students.** A CU student from another campus or a CU-Denver student who has not registered for three consecutive semesters (summers included) is considered a former student and must reapply for admission as a former student. Former CU-Denver business students may be automatically readmitted to the College for up to three years from the semester they last attended if they are in good standing (not on probation or suspension) in the College. Students who have not attended for more than three years, or who have completed 12 or more semester hours at another institution of higher education, must reapply as former students and meet the admission and degree requirements applicable at the time they reapply.

**Old Work Policy.** This policy applies to students newly admitted to the College of Business and former business students...
readmitted to the College after an absence of three semesters. Applicable credits up to five years old will be counted toward business degree requirements. Courses more than five years old will be evaluated individually for their current relevance to the degree program. Students may be required to update their knowledge by taking additional courses when past courses are outdated; in such cases, credit will be given for both courses. Generally, business courses more than eight years old will not apply toward degree credit.

Second Undergraduate Degree. Students may apply to the College of Business and Administration to earn a second undergraduate degree, provided the first undergraduate degree is in a field other than business. Students who are accepted for the second undergraduate degree will be required to pursue courses in the sequence normally required for a business degree. For example, if a student registered for a second degree has not had the required mathematics or general education courses, these must be taken before the student will be eligible to register for business courses. Further, the basic business courses (core courses) must be taken before a student begins to pursue the major field. Applications are available through the Office of Admissions and Records.

If a student applying for a second undergraduate degree has an academic record that justifies consideration for the graduate program, that student will be encouraged to consider one of the master's degree programs.

Minor in Business Administration. Students in other undergraduate schools and colleges at CU-Denver wishing to take a minor in business administration should consult their college advising office for details and requirements.

Double Degree Programs. Numerous career opportunities exist for persons trained in both a specialized field and management. For this reason, students may be interested in combined programs of study leading to completion of degree requirements concurrently in two fields. Combined programs have been developed for engineering and business, and may be arranged for other professional combinations as well. For additional information, contact an undergraduate business program specialist at 628-1277.

Undergraduate Advising and Academic Planning

Admissions Advising. Persons not yet admitted to the College of Business can receive advising on course selection, admission requirements, and other matters from an undergraduate program specialist. To make an appointment, call 628-1277.

Admitted Students. Upon admission to the College, students execute a Degree Contract which identifies the courses required to graduate. This contract contains all the information needed to select courses and monitor progress toward completion of requirements for the degree, Bachelor of Science (Business Administration). Business students are expected to assume responsibility for self-advising. This includes scheduling courses each term, being familiar with all the policies and procedures of the College, and otherwise managing the student’s academic career. Program specialists are available to answer questions about unusual situations; however, they do not provide ongoing information about course selection and scheduling.

Career advising is available from business faculty and from the CU-Denver Office of Career Planning and Placement Services, 556-3477.

Undergraduate Core Curriculum–University of Colorado at Denver

The faculty of the College of Business Administration, College of Engineering and Applied Science, and the College of Liberal Arts and Sciences have established a new core curriculum for undergraduate students. Beginning with the Fall 1990 Semester, all undergraduate students entering CU-Denver will be required to complete the undergraduate core curriculum independent of their college or major. Undergraduate students admitted prior to Fall 1990 will have a choice of either the new core curriculum or the requirements of their college in effect at the time of admission to the college.

The new undergraduate core curriculum seeks to provide all baccalaureate students with basic intellectual competencies in mathematics and computation, writing, oral communication, information literacy, and critical thinking. It also requires all students to come to terms with the basic knowledge areas of the natural and physical sciences, behavioral sciences, social sciences, humanities, and arts. Furthermore, the core curriculum promotes an awareness of cultural and racial diversity. The majority of the new core curriculum is designed to be completed during a student’s freshman and sophomore years in order to provide the foundation for specific training in a student’s major discipline.

The new undergraduate core curriculum for CU-Denver is outlined in the table below. Each college may augment the campus core curriculum. CU-Denver core requirements for business students are specified under Program Requirements in the following section.

<table>
<thead>
<tr>
<th>CU-Denver Undergraduate Core Curriculum</th>
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<tbody>
<tr>
<td>1. Intellectual Competencies</td>
</tr>
<tr>
<td>a. Writing/Speech</td>
</tr>
<tr>
<td>b. Mathematics</td>
</tr>
<tr>
<td>2. Knowledge Areas</td>
</tr>
<tr>
<td>a. Natural and Physical Sciences</td>
</tr>
<tr>
<td>b. Biology, Chemistry, Geology, and Physics</td>
</tr>
<tr>
<td>c. Behavioral Sciences AND Social Sciences</td>
</tr>
<tr>
<td>d. Anthropology, Communication, and Psychology</td>
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<tr>
<td>e. Social Sciences</td>
</tr>
<tr>
<td>f. Economics, Geography, Political Science, and Sociology</td>
</tr>
<tr>
<td>3. Humanities</td>
</tr>
<tr>
<td>a. History, Languages, Literature, and Philosophy</td>
</tr>
<tr>
<td>b. Fine Arts, Music, and Theatre</td>
</tr>
<tr>
<td>4. Multicultural Diversity</td>
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Graduation Requirements

The Bachelor of Science (Business Administration) degree requires the following:

Total Credits. A total of 120 semester hours.

Competencies. Demonstration (by course work or testing) of a satisfactory level of competency in computer literacy, geography, and one foreign language.

Area of Emphasis or Non-Business Minor. Completion of at least 15 semester hours of approved courses in the area of empha-
sis or completion of at least 15 semester hours in an approved non-business minor.

Residence. At least 30 semester hours of business courses (including any business area of emphasis) must be completed after a student's admission to the College. The 30 hours for residence must include BLAW 4120 and MGMT 4500, and 24 hours in other business courses (including area of emphasis courses if an area is selected).

Grade-Point Average Requirement. To graduate, a student must maintain a minimum cumulative scholastic grade-point average of 2.0 for all courses attempted at the University acceptable toward the B.S. (Business Administration) degree, 2.0 for all business courses, and 2.0 for courses in the student's area of emphasis or non-business minor.

Undergraduate Honors. Upon recommendation of the faculty, students who demonstrate superior scholarship are given special recognition at graduation. Students must achieve an overall University of Colorado grade-point average of 3.3 and a grade-point average of 3.5 in all business courses taken at the University of Colorado to be considered for cum laude. Those who achieve an overall University of Colorado 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.

Filing for Graduation. Students must file an Undergraduate Candidacy form and Diploma Card, and request a graduation evaluation (senior audit) prior to registering for their final semester. Failure to do so will delay graduation. Also, students desiring to change their area of emphasis after filing for graduation must have the change approved by the graduation supervisor prior to registering for their final semester. Changes after that time will delay graduation.

Business Program Requirements. Satisfaction of all the following requirements:

Program Requirements Semester Hours
College competencies 0-9
CU-Denver core 41
Mathematics 3
Business core 42
International studies 6
Area of emphasis or non-business minor 15
Other Courses 4-13
Total Semester Hours 120

Detailed descriptions of courses which satisfy program requirements are presented below:

I. COLLEGE OF BUSINESS REQUIRED COMPETENCIES: 0-9 HOURS
A minimum level of competency must be demonstrated in computer literacy, geography, and in one foreign language. Students may satisfy the competency requirements by taking courses as described below or by testing. New freshmen and transfer students should (1) satisfy the English, computer literacy, and geography requirements within their first semester of enrollment at the College, and (2) meet the language competency requirement within the first one, two or three semesters of enrollment as dictated by the number of courses required. A maximum of 9 semester-hours taken to satisfy the competencies may be counted toward the degree (see Other Courses); other hours taken to satisfy the competencies are not applied toward the 120 semester hours required for the degree.

To satisfy competency requirements students must be competent in each specific area or complete the following courses (or their equivalents for transfer students):

MATH 1350 Computers in the Arts and Sciences or CSC 1950-3 Computer Mind Tools I, or test 0-3
GEOS 1102 World Regional Geography or test 0-3
3rd semester language or test 0-13

II. CU-DENVER CORE REQUIREMENTS: 41 SEMESTER HOURS
A. Intellectual Competencies—9 semester hours
ENGL 1020 Writing Workshop II 3
ENGL 2024 Intermediate Composition 3
CMMU 2101 Speechmaking 3
B. Mathematics—3 semester hours.
MATH 1070 Algebra for Social Sciences and Business (*) 3
(Note additional Mathematics requirements in section III below).
C. Knowledge Areas—29 semester hours
1. Natural and Physical Sciences 8
   Two of the following courses (a sequence in the same discipline or courses in two different disciplines):
   BIOL 1550-4 Basic Biology I
   BIOL 1560-4 Basic Biology II
   CHEM 1450-4 Real World Chemistry I
   CHEM 1460-4 Real World Chemistry II
   GEOL 1002-4 Physical Geology I
   PHYS 1052-4 Astronomy I
   PHYS 1062-4 Astronomy II
   2. Behavioral Sciences
   PSYCH 1002 Introduction to Psychology 3

3. Social Sciences
   ECON 2012 Principles of Economics: Macroeconomics 3
   ECON 2022 Principles of Economics: Microeconomics 3

4. Humanities
   HIST 1021 Western Civilization Since 1500 3
   HIST 1011 or HIST. 1361 or HIST. 1371 3

5. Arts 3
   One course from the following:
   ARTS 1000-3 Arts in our Time
   FA 1001-3 Introduction to Arts
   MUS 1001-3 Music Appreciation
   THTR 1001-3 Introduction to Theatre
   6. Multicultural Diversity 3
   One course from list to be approved by College of Business.

III. COLLEGE OF BUSINESS MATH REQUIREMENT: 3 SEMESTER HOURS
MATH 1080 Polynomial Calculus (*) 3
(*) Note: The sequence MATH. 1070 and MATH 1080 may be satisfied by a 6-hour calculus sequence.

IV. BUSINESS CORE: 42 SEMESTER HOURS
Accounting (ACCT 2100 and ACCT 2110 or 2120) 6
Business Law (BLAW 3000, BLAW 4120) 6
Finance (FNCE 3100, FNCE 3200) 6
Information Systems (ISMG 3000) 3
Management (MGMT 3300, MGMT 4370) 6
Marketing (MGMT 3000, MGMT 3050) 6
Operations Management (OPMG 3000) 3
Quantitative Methods (QUAN 2100) 3
Capstone Course (MGMT 4500) 3
Students may replace MKTG 3050 with an alternate marketing course with the permission of the marketing area.

V. INTERNATIONAL STUDIES: 6 SEMESTER HOURS
A. International Non-Business—One course (3 semester hours) from the following list of courses:
   ECON 4410, ECON 4420, ECON 4500, HIST 3160, HIST 4030/5030, HIST 4040/5040, HIST 4430, HIST 4440, HIST 4450, HIST 4460, HIST 4730, HIST 4750, HIST 4780, HIST 4820, PSC 3006, PSC 3042, PSC 3135, PSC 3656, PSC 4216, PSC 4236, PSC 4246, PSC 4266, PSC 4286, PSC 4726, PSC 4736, PSC 4746, PSC 4756, PSC 4766, PSC 4776.

B. International Business—One course (3 semester hours) from the following list of courses:
   FNCE 4370 International Financial Management
   MGMT 4400 Introduction to International Business
VI. AREA OF EMPHASIS OR NON-BUSINESS MINOR: 15 SEMESTER HOURS

Students may choose a general business degree with a non-business minor, or a business degree with an area of emphasis in Accounting, Finance, Human Resources Management, Information Systems, International Business, Management, Marketing, or Operations Management.

A. General Business: Students in General Business must take an approved non-business minor of at least 15 semester hours. The courses must form an integrated sequence and be approved by the College of Business. Up to 6 semester hours of the sequence may be in courses used to satisfy the general (CU-Denver core) requirements but the number of Other Courses (see below) will be correspondingly increased to meet the 120 hours total requirement for the degree. Students interested in completing a minor should contact the individual departments regarding requirements.

B. Areas of Emphasis: Areas of Emphasis must consist of at least 15 semester hours, including any business core courses. For most areas, this will mean 9 semester hours beyond the two courses in the business core. For areas with special requirements or areas with only one course in the core, it may mean 12 or more semester hours beyond the business core. Any hours in excess of 9 are included in the Other Courses described below.

VII. OTHER COURSES: 4-13 SEMESTER HOURS

Students may choose their Other Courses freely, subject to the following general rules: (1) Only non-remedial (college-level, as determined by the College of Business) courses will count toward the B.S. degree; (2) All students receiving the B.S. degree in Business must take at least 48 semester hours in business (excluding the economics core courses). Students in General Business will generally need to take at least one business course in the Other Courses category to meet this requirement; (3) At most 72 semester hours in business (excluding the economics core courses) may be counted toward the 120 credit hours required for the B.S. degree in Business; (4) Any business area of emphasis courses required by specific areas in excess of the 9 hours listed under Area of Emphasis above are included in the Other Courses category; (5) At most 9 semester hours of college-level course work devoted to satisfying the basic competency requirements may be applied toward the B.S. degree in Business.

Guidelines for Elective Credits: Elective credits should be selected carefully because not all classes are acceptable. Generally, to be acceptable, electives must be taught by regular University of Colorado faculty, must have a form of assessment such as a term paper and/or examinations, and must be regular classroom-type classes. Course coverage must be college level, not repetitious of other work applied toward the degree, must be academic as opposed to vocational or technical, and must be part of the regular University offerings.

Specifically, the College will accept:

- A maximum of 6 hours of the theory of physical education, recreation, and dance, and
- A maximum of 6 hours of approved independent study, experimental studies, choir, band, music lessons, art lessons, and
- A maximum of 12 hours of advanced ROTC, providing the student is enrolled in the program and completes the total program.

The College will not accept:

- Activity physical education classes, recreation, workshops, internships, orientations, dance, teaching methods, practicals, and courses reviewing basic skills in computers, English composition, mathematics, and chemistry.

Areas of Emphasis

See individual areas of emphasis in this section for specific courses required.

ACADEMIC POLICIES FOR SELECTING COURSES

Registration. Instruction for registering for courses is contained in another publication called the Schedule of Classes, which is available before each semester. That publication lists the times when registration occurs, the place, and the courses offered.

Maximum Units Per Term. The normal scholastic load of an undergraduate business student is 15 semester hours, with a maximum of 18 hours during the fall/spring semesters and 12 hours during the summer term. Hours carried concurrently in the Division of Extended Studies, whether in classes or through correspondence, are included in the student's load.

Repeating Courses. A failed course (grade of F) may be repeated; however, the F will be included in the grade-point average and will appear on the transcript. A course in which a grade of D—or better—is obtained may not be repeated without written approval from a business program specialist. Courses repeated without approval may not be used in the grade-point average calculation.

Courses From Other Institutions. Business students must have the written approval of a business program specialist to register for courses (excluding MSC pooled courses) offered by other institutions. Credit will not be given for courses taken without approval. Grades of C or better must be earned to receive business degree credit. Generally, only non-business electives or lower division, non-business requirements are acceptable for transfer from other institutions once a student has been admitted to the College of Business. Business students who take more than 12 semester hours from another institution must reapply for admission to the College as transfer students and meet the current admission requirements.

MSC Courses. Business students may select their non-business required and elective courses from those offered from MSC. Grades of C or better must be earned to receive business degree credit; however, the grade is not computed in the CU grade-point average and is treated like other transfer credits. MSC business courses may not be taken for CU-Denver business degree credit.

Graduate Level Courses. With prior written approval of a business program specialist, students may take up to a maximum of 6 semester hours of graduate level non-business elective credits. Students must earn grades of B or better in graduate courses in order to apply the credits toward business degree requirements.

Pass/Fail. Only non-business elective courses may be taken pass/fail. Required business and non-business courses (including the CU-Denver core) may not be taken pass/fail. A maximum of 6 hours pass/fail credit may be applied toward the business degree. Courses taken in excess of the maximum will not be applied toward degree credit. Pass/fail determination must be made within the posted deadlines (at census dates) and may not be rescinded (unless approved by the Undergraduate Appeals Committee).

Correspondence Courses. Only 6 semester hours of credit taken through correspondence study (from regionally accredited institutions) will be applied
toward the business degree. Business courses may not be taken by correspondence. All correspondence courses must be evaluated by a business program specialist to determine their acceptability toward degree requirements, and the program specialist’s written approval is required prior to the student’s registering for courses. Students should contact the Division of Extended Studies for course offerings and registration procedures.

**Independent Study.** Junior or senior business students desiring to work beyond regular course coverage may take variable credit courses (1–3 semester hours) as non-business electives under the direction of an instructor who approves the project, but the student must have the appropriate approval before registering. A maximum of 3 semester hours of independent study courses may be taken in any one semester; a maximum of 6 semester hours may be applied toward degree requirements.

An independent study request form must be signed by the student, instructor, department coordinator, and the Associate Dean for Programs.

**Study Abroad.** Transfer credit from study abroad programs is generally limited to non-business elective credit. Students must meet with a business program specialist to determine course acceptability and for written approval prior to the semester in which they intend to study abroad. Information on the various programs is available at the Office of International Education.

**ACADEMIC POLICIES FOR SUSPENSION AND PROBATION**

To be in good standing, students must have an overall CU grade-point average (GPA) of 2.0 (C=2.0) or better for all course work attempted, and a 2.0 GPA or better for all business courses attempted. PE activity courses, remedial course work, MESC courses, and repeated courses not approved by a business advisor are not included in these averages.

When semester grades become available, students below the 2.0 GPA will be notified of 1) probationary status or 2) suspension. Students are responsible for being aware of their academic status at all times; late grades and/or late notification does not waive this responsibility. College rules governing probation and suspension are as follows:

1. **Any student whose overall GPA, or business course GPA, is less than 2.0 will be placed on probation immediately. A student may be removed from probation when the overall GPA and business GPA has been raised to 2.0.**
2. **A student may remain on probation as long as the student maintains normal degree progress each semester as determined by the College and obtains each term on probation a term GPA of 2.5, and term business course GPA of 2.5, with no grade below a C. Failure to meet probationary provisions will result in suspension. Probationary status may continue only until the student has completed a maximum of 12 semester hours or four terms, whichever comes first; summer is considered a term. The student will be suspended if the GPA deficiency is not cleared within this time.**
3. **Suspended students may not attend the University of Colorado or any division of the University (including Extended Studies).**
4. **Students on suspension may petition for readmission to the College after a minimum of one year from the term in which they were suspended. Generally, petitions are granted only in unusual circumstances. Any suspended student readmitted to the College will be under contract and placed on a continued probation status until the GPA deficiency has been cleared. Such students will be automatically suspended if, at any time, their overall GPA or business GPA again falls below 2.0.**
5. **Students earning all failing grades or no academic credit for a semester will have a stop placed on their record and will not be permitted to register without a business advisor’s approval.**
6. **Combined degree students are required to maintain the same standards of performance as College of Business students in order to be continued in a combined program.**

**AREAS OF EMPHASIS**

Each candidate for the B.S. (Business Administration) degree must complete the prescribed courses in an area of emphasis comprising a minimum of 15 semester hours taken at the University of Colorado at Denver. A 2.0 grade-point average is required for area courses. Typically, students select an area of emphasis after taking several of the core courses. They then complete the hours required for their selected area.

Information about each area of emphasis is given below.

### Accounting

**Advisor:** Michael Firth  
**Telephone:** 628-1220

Accounting courses are offered in several fields of professional accountability at the intermediate, advanced and graduate levels. They provide preparation for practice in one or more of the following fields:

- Accounting and management control systems
- Auditing
- Financial accounting
- Managerial accounting
- Tax accounting
- Teaching and research

In all of these fields a thorough knowledge of the social, legal, economic, and political environment is needed. A high degree of analytical ability and communication skill is indispensable.

Courses in English composition, speech, ethics and logic are desirable. Courses in statistics and information systems, beyond the required College of Business core courses, are highly recommended.

**Required Courses**

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th>ACCT 3220</th>
<th>Intermediate Financial Accounting I</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACCT 3230</td>
<td>Intermediate Financial Accounting II</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ACCT 3320</td>
<td>Intermediate Cost Accounting</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Accounting elective at the 4000 level</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Students planning to pursue accounting as a career usually take more than the above required hours. Many students take a total of about 30 hours of accounting, often taking two courses each semester in their junior and senior years. Students should work closely with the accounting faculty and business advisors in planning their accounting programs.

Accounting students often specialize in a particular topical area of accounting beyond the core. Examples of these specializations include the following recommended courses:

- **Financial Accounting and Auditing**
  - ACCT 4240: Advanced Financial Accounting
  - ACCT 4410: Income Tax Accounting
  - ACCT 4420: Advanced Income Tax Accounting
  - ACCT 4620: Auditing

- **Managerial Accounting and Systems**
  - ACCT 4330: Managerial Accounting, Problems and Cases
  - ACCT 4540: Accounting Systems and Data Processing
  - ACCT 4620: Auditing
ACCT 4800. Accounting for Government and Nonprofit Organizations

Graduate study in accounting is receiving increasing emphasis by professional organizations and employers. Students meeting admission requirements should consider continuing their education at the graduate level.

Finance
Advisor: John Turner
Telephone: 628-1226

The principal areas of study in finance are financial management, financial institutions, investments, and international finance. The study of finance is intended to provide an understanding of fundamental theory and practice pertaining to finance and to develop the ability to make sound financial management decisions. Every endeavor is made to train students to think logically about financial problems and to formulate sound financial decisions and policies. It is necessary to understand the importance of finance in the economy and the functions and purposes of monetary systems, credit, prices, money markets, and financial institutions. Emphasis is placed on financial policy, management, control, analysis, and decision making. Numerous job opportunities exist with financial institutions and in the field of business finance. ACCT 2100 and ACCT 2110 are required prerequisites for the finance area.

Required Courses  
ACCT 4320. Corporate Financial Decisions ............ 3
ACCT 4330. Investment and Portfolio Management ........... 3
ACCT 4350. Financial Markets and Institutions ........... 3
Recommended Electives  
ACCT 4340. Security Analysis ......................... 3
ACCT 4360. Management of Financial Institutions ........... 3

Students should note that all finance courses are not offered every semester. Finance majors are encouraged to take additional accounting courses as business electives.

Human Resources Management
Advisor: Prof. Wayne F. Cascio
Telephone: 628-1215

Human resources management offers opportunities for students to develop professional competence in the areas of personnel administration and labor relations. Students acquire an understanding of and skills in developing and implementing human resources systems including recruitment, selection, evaluation, training, motivation, and union-management relations.

Required Courses  
MGMT 4340. Labor and Employee Relations .......... 3
MGMT 4380. Human Resources Management: Employment .... 3
MGMT 4410. Human Resources Management: Compensation Administration .... 3

Recommended Electives  
MGMT 3350. Managing Individuals and Work Groups .... 3
MGMT 4370. Organization Design ...................... 3
PSY 3135. Organizational Psychology .............. 3
PSY 3155. Industrial Psychology .............. 3
PSY 4405. Theories of Social Psychology .......... 3
OPMG 4440. Quality and Productivity .............. 3
ACCT 2100. Introduction to Managerial Accounting ... 3
ISMG 3500. Logical Data Structures ....... 3
ISMG 4500. Data Structures ....... 3
ISMG 4600. Systems Analysis and Design .......... 3

Students planning to pursue an information systems career may wish to study the role of information systems in operations management and accounting. The following courses are recommended as free electives:

International Business
Advisor: Kang Rae Cho
Telephone: 628-1280

Increasingly, businesses are reorienting their thinking, planning, and operations to capitalize on opportunities that exist in the world marketplace. Every phase of business is affected by this reorientation. For individuals with the appropriate skills, training, and interest, international business provides excellent career opportunities.

The international business curriculum is designed to enhance and build on thorough training in basic business skills and to provide students with additional skills and knowledge appropriate to international business.

ECON 4410 (International Trade and Finance) is a required prerequisite for the international business area and applies as an international studies elective.

Required Courses  
ACCT 4370. International Financial Management .... 3
MKTG 4580. International Transportation .......... 3
MKTG 4200. International Marketing .............. 3
MKTG 4400. International Business .......... 3

Students should see an academic advisor for course scheduling.

A second area of emphasis in business is highly recommended. The course requirements for a second area can be included as part of the business and free elective hours. In addition, serious consideration should be given to either a minor or a certificate in international affairs.
offered by the College of Liberal Arts and Sciences, and to advanced study of a foreign language.

Management
Advisor: W. Graham Astley
Telephone: 628-1211

The management curriculum provides the foundation for careers in supervision and general management in a wide variety of organizations. It develops skills in management practice through an understanding of general management principles, individual and group behavior, organizational change and design, and human resources management.

Required Courses Semester Hours
MGMT 3350. Managing Individuals and Work Groups .................................. 3
MGMT 4350. Conflict and Change in Organizations ................................... 3
MGMT 4370. Organization Design .............................................................. 3
MGMT 4380. Human Resources Management: Employment .................... 3

Recommended Electives
MGMT 4400. Introduction to International Business ............................. 3
MGMT 4410. Human Resources Management: Compensation Administration ........ 3
MGMT 4950. Topics in Business ............................................................... 3

Marketing
Advisor: Gordon G. Barnewall
Telephone: 628-1296

Marketing is concerned with directing the activities of the organization toward the satisfaction of customer wants and needs. This involves understanding customers, identifying those wants and needs which the organization can best serve, guiding the development of specific products or services, planning and implementing ways to take products or services to the market, securing the customer's order, and finally, monitoring customer response in order to guide future activities.

In most organizations, marketing is a major functional area that provides a wide variety of career opportunities in such fields as personal selling and sales management, advertising and sales promotion, public relations, marketing research, physical distribution, product management, market management, marketing information systems, and retail management. Increasingly, career opportunities exist in service businesses and not-for-profit organizations.

Required Courses Semester Hours
(The following two courses)
MKTG 3100. Market Research ................................................................. 3
MKTG 4800. Marketing Strategies and Policies ...................................... 3
(Choose two of the following courses)
MKTG 3200. Consumer Behavior ......................................................... 3
MKTG 4000. Advertising ................................................................. 3
MKTG 4100. Physical Distribution Management .................................... 3
MKTG 4200. International Marketing .................................................. 3
MKTG 4500. Advertising Management and Public Relations ............... 3
MKTG 4580. International Transportation ........................................... 3
MKTG 4600. Business Marketing ......................................................... 3
MKTG 4700. Personal Selling and Sales Force Management .................. 3

In addition to the four required courses, students may select marketing electives, business electives, and non-business electives that support their particular career orientations. The marketing faculty advisor can assist the student in choosing an appropriate set of electives to fit career objectives.

Operations Management
Advisor: Gary A. Kochenberger
Telephone: 628-1205

Operations management studies are designed to prepare students for careers as operations manager, management analyst, or systems analyst in such private sector organizations as manufacturing, banking, insurance, hospitals, and construction, as well as in a variety of municipal, state, and federal organizations.

Operations managers may be charged with the design, implementation, operation, and maintenance of the core operational system. Managerial activities could include forecasting demand, inventory planning and control, scheduling labor and equipment, job design and labor standards, quality control, purchasing, and facilities location and layout.

The outlook for jobs in this area continues to be strong. This placement is aided by the student chapter of the American Production and Inventory Control Society and work intern programs provided to qualified students. Participation in live case research and consulting projects with local organizations is usually an integral part of this course of study.

Students whose major areas of emphasis are information systems, transportation management, accounting, or engineering will find the operations management 4000-level courses to be particularly well related to their courses of study. Students should plan their schedules carefully as required courses are not offered every semester.

Required Courses Semester Hours
(The following three courses)
OPMG 4400. Planning and Control Systems ....................................... 3
OPMG 4440. Quality and Productivity .................................................. 3
(One of the following courses)
OPMG 4470. Strategic Analysis in Operations Management .................. 3
OPMG 4600. Purchasing, Materials Management, and Negotiation .......... 3

Recommended Electives
ISM 2200. Business Programming: Structured COBOL ......................... 3
ISM 3350. Managing Work Groups ....................................................... 3
MGMT 4340. Labor and Employee Relations ......................................... 3
MGMT 4370. Organization Design .......................................................... 3
MGMT 4380. Human Resources Management: Employment ................. 3
QUAN 3000. Intermediate Statistics ...................................................... 3
GEOG 3411. Economic Geography: Manufacturing .......................... 3
GEOG 4650. Location Analysis .............................................................. 3

Students planning to take the APICS (American Production and Inventory Control Society) or NAPM (National Association for Purchasing Management) certification examinations should consult with an advisor to determine which elective should be taken.

Courses

UNDERGRADUATE COURSES - ACCOUNTING


ACCT 2110-3. Financial Accounting and Financial Statement Analysis Fall, Spring, Summer. The financial accounting process role of the accounting profession, and the analysis of financial statements. For non-accounting majors only. Accounting majors should not take this course but should take ACCT 2120. Prereq: ACCT 2100.

ACCT 2120-3. Introduction to Financial Accounting Fall, Spring, Summer. The preparation and interpretation of the principal financial statements of the business enterprise, with emphasis on asset and liability valuation problems and the
determination of net income. For accounting majors only. Prereq: ACCT 2100.


*Fall, Spring, Summer.* Intensive analysis of generally accepted accounting principles, accounting theory, and preparation of annual financial statements for public corporations. Prereq: ACCT 2000 or 2120 and junior standing.

**ACCT 3230-3. Intermediate Financial Accounting II**

*Fall, Spring, Summer.* Continuation of ACCT 3220. Prereq: ACCT 3220.

**ACCT 3320-3. Intermediate Cost Accounting**

*Fall, Spring, Summer.* 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 computer assisted decision models. Prereq: ACCT 3310 or 2120 and QUAN 2010.

**ACCT 4240-3. Advanced Financial Accounting**

*Fall, Spring, Summer.* Advanced financial accounting concepts and practices with emphasis on accounting for partnerships, business combinations, and consolidations. Prereq: ACCT 3230.

**ACCT 4330-3. Managerial Accounting Problems and Cases**


**ACCT 4410-3. Income Tax Accounting**

*Fall, Spring, Summer.* Provisions and procedures of federal income tax laws and requirements affecting individuals and business organizations, including the management problems of tax planning and compliance. Prereq: ACCT 3220 or 3320.

**ACCT 4420-3. Advanced Income Tax Accounting**

*Fall, Spring.* Continuation of ACCT 4410, with special emphasis on the income tax problems of partnerships and corporations. Prereq: ACCT 4410.

**ACCT 4540-3. Accounting Systems and Data Processing**

*Fall.* The design and analysis of accounting information systems, automated data processing methods with special emphasis on computers and computer programming, and the role of accounting in the management process. Prereq: ACCT 3320.

**ACCT 4620-3. Auditing**

*Fall, Spring, Summer.* Generally accepted auditing standards and the philosophy supporting them; auditing techniques available to the independent public accountant. Pertinent publications of the AICPA reviewed. Prereq: ACCT 3230.

**ACCT 4800-3. Accounting for Government and Nonprofit Organizations**

*Spring.* Planning and control of government and nonprofit organizations. Includes program budgets, responsibility accounting, and fund accounting. Prereq: ACCT 3320 or 3220.

**ACCT 4840-1 to 8. Independent Study**

**ACCT 4950-3. Special Topics**

Research methods and results, special topics, and professional developments in accounting. Prerequisites vary according to topic and instructor requirements.

**UNDERGRADUATE COURSES – BUSINESS LAW**

**BLAW 3000-3. Legal, Ethical, and Social Environments of Business I**

*Fall, Spring, Summer.* This course addresses the most fundamental ways the legal, ethical and social environments of business affect managers. Students are taught to identify legal issues, make ethical judgments about business conduct, and understand the ways ethical and social issues are developed. Topics include factual analysis of legal, ethical and social issues; ethical theory and its application; law making processes; contracts (and related topics); torts; product liability; corporate social responsibility, social audits, and corporate political action. Prereq: junior standing.

**BLAW 4120-3. Legal, Ethical, and Social Environments of Business II**

*Fall, Spring, Summer.* This course presents additional knowledge about the ways the legal, ethical and social environments of business affect managers. Students are taught to identify legal issues, make ethical judgments about business conduct, and understand the ways social processes influence, and are influenced by, business. Relations among legal, ethical and social issues are developed. Skills in factual analysis and the application of ethical theory are advanced and refined. Topics include advanced ethical theory, property law and environmental issues, agency, business organizations and governance, employment law and discrimination, administrative regulation, stockholder analysis and international law. Prereq: BLAW 3000.

**BLAW 4500-3. Legal Issues for CPA's**

*Fall, Spring.* This course is designed for those taking the business law section of the CPA exam. In addition to expanded coverage of some topics covered in BLAW 3000 and BLAW 4120, this course covers additional topics addressed by the CPA examination. Prereq: BLAW 3000 and 4120.

**UNDERGRADUATE COURSES – FINANCE**

**FNCE 3100-3. Principles of Finance I**

*Fall, Summer.* This is an introduction to money and capital formation including the role of banks and other financial intermediaries; the Federal Reserve system and government regulation; financial markets and instruments; and stock and securities exchanges. Also covered are foreign currency exchange rates, risk management, and emerging financial, economic and regulatory trends. Discussion includes both domestic and international aspects. This course is part of the required business core. Prereq: ECON 2012, 2022, ACCT 2100, QUAN 2010 and junior standing.

**FNCE 3200-3. Principles of Finance II**

*Fall, Spring, Summer.* This course focuses on the basic principles governing the management of capital in the business firm. Topics include financial statement analysis, costs and sources of financing, international financial management, capital budgeting, and project selection methodology. This course is part of the required business core. Prereq: FNCE 3100 and either ACCT 2110 or 2120.

**FNCE 4320-3. Corporate Financial Decisions**

*Fall, Spring.* This course develops the analytical and decision-making skills of students in solving financial management problems. Topics include planning, control, and financing of current operations and longer term capital commitments; management of income; evaluation of capital investments; and expansion. Case method of instruction. Prereq: FNCE 3200

**FNCE 4330-3. Investment and Portfolio Management**

*Fall, Spring.* This course discusses investment problems and policies and the methodology for solution and implementation. Topics include portfolio analysis, selection of investment media, and measurement of performance. Prereq: FNCE 3100.

**FNCE 4340-3. Security Analysis**

Analysis of the financial condition of the firm, valuation of debt and equity securities, and the selection of investment media for portfolios. Prereq: FNCE 4330.

**FNCE 4350-3. Financial Markets and Institutions**

*Fall, Spring.* This course focuses on the supply and demand for loanable funds, the process of money creation, the structure of interest rates, and the role of the central bank. Special attention is devoted to the impact of monetary and fiscal policies on interest rates, the flow of funds, and economic activity. Prereq: FNCE 4310.
FNCE 4360-3. Management of Financial Institutions. An analysis of structure, markets, regulations, and chartering commercial banks. Problems and policies of the internal management of funds, loan practices and procedures, investment behavior, deposit and capital adequacy, liquidity, and solvency. Analytical methodology for these problems is developed. Prereq: FNCE 4310.

FNCE 4370-3. International Financial Management. Fall, Spring, Summer. Financial management in the international environment. Topics include international capital movements; international operations as they affect the financial functions; foreign and international institutions; the foreign exchange process. Also considers financial requirements, problems, sources, and policies of firms doing business internationally. Prereq: FNCE 3200.

FNCE 4840-1 to 8. Independent Study. FNCE 4950-3. Special Topics. Research methods and results, special topics, and professional development in finance. Prerequisites vary according to topic and instructor requirements.

UNDERGRADUATE COURSES – INFORMATION SYSTEMS

ISMG 2200-3. Business Programming with Cobol. Fall, Spring, Summer. A first course in programming using the COBOL language. Basic elements of the language are discussed and demonstrated through business applications. Structured programming is emphasized. Prereq: MATH 1080 or six hours of nonremedial mathematics; computer literacy as defined by College of Business requirements.

ISMG 3000-3. Business Information Systems. Fall, Spring, Summer. A study of business information systems focusing upon computer hardware and software as they relate to business information. Includes computer programming, computer systems, and computer applications. The purpose of this course is to introduce students to the concepts, vocabulary, and function of business information systems and the computer. Prereq: MATH 1080 or 6 hours nonremedial college mathematics; computer literacy as defined by college of business requirements.

ISMG 3200-3. Data Structures. Fall, Spring. This course builds upon the programming foundation laid in ISMG 2200 and focuses on data structures and their use in business applications. The Pascal programming language will be used as the vehicle for investigating a variety of data structure topics. Case studies may be used to illustrate applications of the material. Prereq: ISMG 2200 or instructor consent, QUAN 2010 is recommended.

ISMG 3300-3. Operations Research for Decision Support. Fall. This course studies the various methods and models of operations research and their application to managerial settings. Typical topics include inventory models, simulation, linear programming, and queuing. Prereq: QUAN 2010.

ISMG 3700-3. Computer Technology. This course provides a conceptual framework in areas of computer architecture, operating systems, programming translators, and telecommunications. It emphasizes concepts needed to communicate effectively with computer technicians. Prereq: ISMG 2200 or consent of instructor.

ISMG 4500-3. Database Management Systems. Spring. This course focuses on both the technical aspects of DBMS and their management implications. It emphasizes analysis, design, and implementation of database applications. Topics include file structures, data modeling, administration of DBMS, DBMS evaluation, data integrity and data security. Prereq: ISMG 3200.

ISMG 4600-3. System Analysis and Design. Fall. This course covers the development process by focusing on structured analysis and design processes and tools. The structured analysis and design process is discussed within the context of the system development life cycle, and other approaches to application development, e.g., prototyping. Topics to be covered include requirement analysis, feasibility study, general and detailed design, system testing, and implementation procedures. Prereq: ISMG 3200.

ISMG 4840-1 to 8. Independent Study.

ISMG 4950-3. Special Topics. Seldom Offered. This course varies from offering to offering. Typically, it is a research-oriented course exploring new developments in information systems. Prerequisites vary according to topic.

UNDERGRADUATE COURSES – MANAGEMENT

MGMT 1000-3. Introduction to Business. Fall, Spring, Summer. Nature of business enterprise. Role of business in our society; problems confronting business management, career opportunities in business. Business students are advised to take this course during their freshman year, but may not take it in the junior or senior years. Open only to freshmen, sophomores, and non-degree students, and music majors at all levels.

MGMT 3300-3. Management and Organization Behavior. Fall, Spring, Summer. Emphasizes the application of behavioral science knowledge to understanding people and organizations. Motivation, authority, politics, and the role of groups in contemporary organizations are some of the topics covered. Prereq: junior standing.

MGMT 3350-3. Managing Individuals and Work Groups. Fall, Spring, Summer. Examines what makes small groups effective in organizations. Develops the ability to analyze interpersonal and group behavior, and improve group functioning. Builds interpersonal and small group leadership skills. Prereq: MGMT 3300.

MGMT 4340-3. Labor and Employee Relations. Fall, Spring. Analyzes legal, political, social, and managerial aspects of collective bargaining and employee relations. Prereq: MGMT 3300.

MGMT 4350-3. Conflict and Change in Organizations. Spring. This course is designed to help students understand common types of conflict within organizations and the strategies useful for resolving conflict. Techniques for managing change also are stressed. Prereq: MGMT 3300.

MGMT 4370-3. Organization Design. Fall, Spring. Examines how to structure organizations to perform effectively. Emphasis is placed on the role of the task, technology, and environment as constraints on organization design. Prereq: MGMT 3300.


MGMT 4400-3. Introduction to International Business. Fall, Spring. An overview of the international business environment, the impact of environmental factors on international business operations, and the identification and analysis of complex managerial issues facing international business firms. Prereq: ECON 4410 and junior standing or consent of instructor.

MGMT 4410-3. Human Resources Management: Compensation Administration. Spring. Study of planning and administration of compensation systems, including government, union and labor market influences on pay; development of pay systems and employee benefits for non-managerial, managerial, and overseas employees. Prereq: QUAN 2010 and MGMT 4380.
MGMT 4500-3. Business Policy and Strategic Management. Fall, Spring, Summer. Emphasis is on integrating the economic, market, social/political, technological, and competition components of the external environment with the internal characteristics of the firm; and deriving through analysis the appropriate interaction between the firm and its environment to facilitate accomplishment of the firm's objectives. Open only to business students in their graduation semester. Prereq: completion of all business core courses.

MGMT 4840-1 to 5. Independent Study. MGMT 4950-3. Special Topics in Management. A number of different current topics in management will be offered under his course number. Consult the schedule of classes for current course offerings. MGMT 5040-1 to 8. Independent Study.

UNDERGRADUATE COURSES—MARKETING

MGKT 3000-3. Principles of Marketing. Fall, Spring, Summer. Provides a marketing management approach to the consideration of product planning, pricing, promotion, and distribution of goods and services. Emphasizes the role of the consumer and marketing management. Prereq: ACCT 2000 and junior standing.

MGKT 3050-3. Applied Marketing Management. Fall, Spring, Summer. This course is offered as the second course in a sequence, following the principles of marketing course (MGKT 3000). The course is designed to enhance the student's ability to formulate and implement a marketing plan, and to better understand the relationship of marketing to other business functions. It will emphasize application of marketing concepts through use of cases, simulations, or projects. In addition, it will provide further treatment of a number of marketing areas, such as international marketing and services marketing. Prereq: MGKT 3000.

MGKT 3100-3. Marketing Research. Fall, Spring. Provides practical experience in research methodologies, planning as investigation, designing a questionnaire, selecting a sample, interpreting results, and making a report. Techniques focus on product analysis, motivation research, cost analysis, and advertising effectiveness. Prereq: MGKT 3000, QUAN 2010.

MGKT 4000-3. Advertising. Fall, Spring. Analyzes principles and practices in advertising from a managerial viewpoint. Considers the reasons to advertise, product and market analysis as the planning phase of the advertising program, media selection, creation and production of advertisements, copy testing, and development of advertising budgets. Prereq: MGKT 3000.

MGKT 4100-3. Physical Distribution Management. Infrequently Offered. Investigation and analysis of logistics of systems for firms engaged in manufacturing and marketing. Component parts of each system are studied and analytical tools are presented for selecting alternatives which will attain distribution goals of the firm. Prereq: MGKT 3000.

MGKT 4200-3. International Marketing. Fall, Spring. Studies managerial marketing policies and practices of firms marketing their products in foreign countries. Analytical survey of institutions, functions, policies, and practices in international marketing. Relates marketing activities to market structure and environment. Prereq: MGKT 3000.

MGKT 4400-3. Marketing Institutions and Retailing. Emphasis placed on functions and strategies of all aspects of retail management including site selection, merchandising, pricing and promotion, and inventory and promotion control. Also includes the examination of wholesaling and broker activities. Prereq: MGKT 3000.

MGKT 4500-3. Advertising Management and Public Relations. Infrequently Offered. Focuses on advertising issues from an agency point of view. Considers issues of stimulating primary and selective demand, media selection, developing the advertising program or campaign, establishing budgets, evaluating results, and managing agency relations. Public relations issues incorporated in the campaign include effective publicity techniques, lobbying and stockholder and community relations. Prereq: MGKT 4000.

MGKT 4580-3. International Transportation. (Formerly TRMG 4580.) Fall. Analysis of international transportation (primarily sea and air) in world economy. Detailed study of cargo documentation and freight rate patterns. Included are liability patterns, logistics, economics, and national policies of transportation. Prereq: senior standing.

MGKT 4600-3. Business Marketing. Infrequently Offered. Considers the problems of marketing goods and services to organizations buying for their own use or for incorporation in an end product. Focuses heavily on organizational buying behavior and analysis of demand for goods and services in both profit and not-for-profit organizations. Emphasizes development of marketing programs in the context of organizational demand for goods and services. Prereq: MGKT 3000.

MGKT 4700-3. Personal Selling and Sales Management. Fall. Introduces the student to principles of personal selling and issues in managing the field sales force. Focusses on models of personal selling, recruiting, selection, training, compensation, supervision and motivation, as well as organizing the field sales force, sales analysis, forecasting, and budgeting.

MGKT 4800-3. Marketing Strategies and Policies. Fall, Spring. Focuses on process of formulating and implementing marketing channels and product analysis. A case approach is utilized to develop the student's analytical ability to integrate all major areas of marketing. Prereq: MGKT 3000 and six additional hours in marketing.

MGKT 4840-1 to 5. Independent Study. MGKT 4950-3. Special Topics. Courses offered on an irregular basis for the purpose of presenting new subject matter in marketing. Prerequisites will vary depending upon the particular topic and instructor requirements.

UNDERGRADUATE COURSES—OPERATIONS MANAGEMENT

OPMG 3000-3. Operations Management. Fall, Spring, Summer. An introduction to the design and analysis of operating systems in manufacturing, services, and public sector organizations. Topics include facility layout and location, job design, work standards, quality and productivity, inventory planning and control, simulation, waiting line analysis, and linear programming. Prereq: ACCT 2000, QUAN 2010. It is important to take this course in the junior year.

OPMG 4400-3. Planning and Control Systems. Fall. Study of the design, implementation, and control of integrated operations, scheduling, and inventory planning systems. Topics include demand forecasting, aggregate planning, capacity planning, master scheduling, inventory management, material requirements planning, stockless systems, and operations control. Organizations studied include manufacturing, service, and public sector. Prereq: OPMG 3000.

OPMG 4440-3. Quality and Productivity. Spring. Study of the various techniques to measure quality and productivity in organizations and the practical management issues related to implementing quality and productivity systems. Topics include statistical quality control, total factor productivity, quality circles, total quality control, work design and measurement, and quality and productivity management systems. Prereq: OPMG 3000 and MGMT 3300.
OPMG 4470-3. Strategic Analysis in Operations Management. Spring. Study of the analysis and formulation of operations management strategy and policy. Emphasis will be on the role of the operations function in the strategic processes of the organization. Decision making will be stressed through the use of case studies and the analysis of actual business situations. Prereq: OPMG 4400 and 4440.
OPMG 4840-1 to 8. Independent Study. OPMG 4950-3. Special Topics. A number of different current topics in operations management will be discussed in the course. Consult the Schedule of Classes or contact the area coordinator for further information.

UNDERGRADUATE COURSES – QUANTITATIVE METHODS

GRADUATE BUSINESS PROGRAMS (M.B.A./M.S.)
Associate Dean: Peter G. Bryant
The Graduate School of Business Administration offers programs leading to the Master of Business Administration (M.B.A.), and the Master of Science (M.S.) in specific fields of business and health administration. In addition, the Master of Business Administration for Executives (Executive M.B.A.) is offered as a multi-campus program of the Graduate School of Business Administration, and the Executive Program in Health Administration (Executive M.S.H.A.) is offered through the Executive Program.
The M.B.A., the Executive M.B.A., and the M.S. degrees in business are accredited by the American Assembly of Collegiate Schools of Business (AACSB). The M.S. in Health Administration is accredited by the Accrediting Commission on Education for Health Services Administration (ACEHSA).

Requirements for Admission to the M.B.A. and M.S. Programs
Admission to the graduate program in business administration (M.B.A. and M.S.) is granted only to students showing high promise of success in graduate business study. Admission is based on the following indicators of the candidate's likelihood to succeed in the program.
Academic Record. The bachelor's degree must be from a regionally accredited university. The total academic record is considered, including the grade-point average, the course of study, and the quality of the program.
Test. The Graduate Management Admission Test (GMAT) is required. The GMAT test is given four times each year at numerous centers throughout the world. For information and to make application for the test, write to: Graduate Management Admission Test, Educational Testing Service, CN 6103, Princeton, New Jersey, 08541 or phone (609) 771-7330. The code number for CU-Denver's graduate business program is 4819.
Work Experience. A record of appropriate employment at increasing levels of responsibility is considered a positive indicator of the likelihood of successful completion of graduate work.
Seniors in this University who have satisfied the undergraduate residence requirements, and who need no more than 6 semester hours overall to meet requirements for a bachelor's degree, may be admitted to the Graduate School of Business Administration by special permission of the associate dean. They must meet regular admission criteria and submit complete applications by deadlines listed below.
Background Requirements. Students applying for graduate programs in business do not need to have taken their undergraduate degrees in business. The M.B.A. program is specifically designed so that the required courses cover the material needed for completion of the degree. There are no prerequisites needed to enter the M.B.A. program. Students with non-business backgrounds have completed the program successfully. It is recommended, however, that students have a minimum level of basic personal computer proficiency as well as a good working knowledge of basic algebra. Should you feel inadequate in either area, please contact the Graduate School of Business Administration for information.
Applicants for the M.S. degree, however may be required to take prerequisite courses, depending on the individual's academic and professional background. For more detailed information contact a graduate student advisor, telephone 628-1276.

THE ADMISSION PROCESS
To be considered for admission, applicants for graduate programs other than Health Administration and Executive Program must:
1. Submit a completed application along with all required transcripts and supporting materials and the nonrefundable application fee of $40 ($30 for M.S. applicants, $70 for dual M.B.A./M.S. applicants) prior to the application deadlines: April 1 for Fall Semester admission. July 1 for Fall Semester admission, November 1 for Spring Semester admission.
International students must fill out special applications and meet earlier deadlines. Contact the graduate office at 628-1276 for details. Early applications are recommended, as they receive early priority in registration and class enrollment. Applications received after these dates or without complete supporting documentation and transcripts will not be considered for admission in that term or semester.
2. Have GMAT scores forwarded to the program by the Educational Testing Service. The code for CU-Denver's graduate business program is 4819.
3. Have two official transcripts (not student copies) sent from each college attended to the address below. Personal interviews are not required.
   The mailing address for applications is:
Graduate Admissions
Graduate School of Business Administration
University of Colorado at Denver
Campus Box 165, P.O. Box 173364
Denver, CO 80217-3364
Applicants for the Executive M.B.A. and M.S. in Health Administration programs should consult the relevant sections for application information.
Academic Policies for Graduate Students

Advising. Prospective graduate students are encouraged to learn about admissions and program requirements by attending one of the regularly held prospective student orientations. In addition, as soon as possible after admission, students should schedule an appointment with a graduate advisor to discuss general degree requirements. Master of Science students should consult with an advisor to determine any background course work that may be required. All M.S. students need to file a formal degree plan during their first term in residence. All M.B.A. students must file a formal degree plan as soon as electives are considered. These plans, with appropriate signatures, will be filed with the Graduate School of Business Administration.

Course Load. The normal course load for full-time graduate students is 9–15 semester hours. However, because many students are pursuing a career, it is possible to attend classes on a part-time basis at times convenient to the individual's work schedule. Graduate courses are offered primarily in the evening hours to accommodate the working student.

Transfer of Credit. Upon approval of the Graduate Appeals Committee, a maximum of 6 semester hours of graduate work may be transferred from another AACSB-accredited master's program.

Time Limit. M.B.A. students must complete the curriculum within five years from the date of first enrollment in the program. Courses older than 5 years generally will not be accepted for the degree unless they have been validated by the specific department. M.S. students must in most cases beyond those in the common body of knowledge list within 5 years and with reasonable continuity.

Students who have not been enrolled or three consecutive semesters must reapply for admission to the program and pay the application fee. Readmitted students are required to complete degree requirements in effect at the date of their readmission.

Graduation. Students must file an application for Admission to Candidacy and a Diploma Card with the Graduate School of Business Administration no later than September 1 for December graduation, January 1 for May graduation, and June 1 or August graduation.

Minimum Grade-Point Average. A minimum cumulative grade-point average of 3.0 must be achieved and maintained in courses taken for a graduate business degree. All courses taken to meet the degree requirements, except transfer hours, are included in the grade-point average. If the student's cumulative grade-point average falls below 3.0, the student will be placed on academic probation and normally given one calendar year or 9 semester hours of work (whichever comes first) in which to achieve the required 3.0 cumulative average. Failure to achieve the required average within the allotted time period will result in suspension.

Any grade below a C– (1.7) is a failing grade for graduate students. Graduate students must repeat a course for which they have received a grade below a C–. Both the original grade and the grade for the repeated course count in the computation of the grade-point average.

To earn a grade of W (withdrawal without credit) in a course, a student must be earning a grade of C or better in the course. Students will not be permitted to withdraw from courses after the tenth week of the semester without the approval of the associate dean. The approval of the instructor will also be required.

Admission to Graduate Business Courses

Admission to graduate level courses is reserved for students admitted to the graduate programs in business. Non-degree students and graduate students from other University of Colorado schools or colleges may be permitted to attend only with written permission of the associate dean and on a space available basis. 6000-level courses are reserved exclusively for graduate students. 5000-level courses may be offered simultaneously with 4000-level courses. Students should check with a graduate advisor to confirm acceptability of 5000-level courses prior to registering.

MASTER OF BUSINESS ADMINISTRATION (M.B.A.)

The Master of Business Administration (M.B.A.) program provides a general background in management and administration. This background enables the student to have the breadth of exposure and depth of knowledge required for an advanced level management career. The program is devoted to developing the concepts, analytical tools, and communications skills required for competent and responsible administration of an enterprise viewed in its entirety, within its social, political, and economic environment.

The M.B.A. program is available in three different configurations: the INDIVIDUALIZED M.B.A. program, the COHORT M.B.A. program, and the EXECUTIVE M.B.A. program (see following section). The INDIVIDUALIZED M.B.A. and the COHORT M.B.A. both have the same curriculum requirements; they differ only in the flexibility of course scheduling and the time required to complete the program.

The INDIVIDUALIZED M.B.A. allows the scheduling of classes with maximum flexibility so students can progress through the program at their own pace by taking as little as one class per semester, or as many as five classes per semester, at times that are convenient to their work schedule. The program can be completed in as little as 16 months, or as long as 5 years.

The COHORT M.B.A. enables the student to complete the program in 3 years and one semester, taking 2 courses fall and spring semester and one in the summer term. Each group of entering students moves through the core courses as a cohort, taking prescribed core courses two nights per week, thus sharing their educational and professional experience. Electives are taken as available to meet individual objectives. For working professionals who can meet the time requirements of the COHORT program, it provides a unique and rewarding educational experience.

Candidates in both the individualized and the COHORT M.B.A. programs must complete specific requirements consisting of 16 courses (48 semester hours) as follows:

<table>
<thead>
<tr>
<th>Core Requirements</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSN 6000. Accounting for Managers</td>
<td>3</td>
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<tr>
<td>BUSN 6020. Quantitative Business Analysis</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6040. Human Behavior in Organizations</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6060. Marketing Management</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6080. Management of Operations</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6100. Management Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6120. Managerial Economics</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6140. Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6160. Legal and Ethical Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6180. Economic Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6200. Business Policy and Strategic Management</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Required Core Semester Hours 33
Electives:
One graduate course from each of three of the five following areas:
Accounting, Finance, Information Systems/Operations Management, Marketing, or Management 9
Free electives ........................................... 6
Total Elective Semester Hours ....................................... 15
Total Required Semester Hours for M.B.A. degree .................. 48

Notes and Restrictions
Core. Depending on demonstration of a strong background in one area, a maximum of one course may be waived in the core, although the 48 hour requirement is not reduced. An additional elective will then be substituted.

Electives. No more than nine hours of elective graduate courses may be taken for credit in any one discipline or area of emphasis. Students may elect not to take any emphasis. Three hours maximum may be taken outside the Graduate School of Business Administration, but only with prior written approval of the associate dean.

Subject to the above distribution requirements, students have a wide range of options available in selecting the 15 hours of electives. No area of emphasis is required for the M.B.A. degree, permitting students to choose a combination of courses appropriate for their individual career needs. If a student wishes to pursue an area of emphasis, several areas are available including accounting, finance, information systems, international business, operations management, management, and marketing. Areas of emphasis all require 9 semester hours of electives (5000 or 6000 level) in addition to the area core courses. Consult a graduate advisor for detailed requirements. No thesis or comprehensive exam is required for the M.B.A. program.

For additional information about the M.B.A. program contact a graduate student advisor at 628-1276.

MASTER OF SCIENCE PROGRAMS

Master of Science degrees (M.S.) are offered in the fields of accounting, finance, health administration, marketing, management, and information systems.

The M.S. degree affords the opportunity for specialization and depth of training within a particular major field and, where allowed or required, a minor field. The specialization and expertise developed with the M.S. program prepares the student for more specialized staff positions in industry, the non-profit sector, and government.

The course requirements for the M.S. degree in each of the fields are divided into two components—common background and graduate core requirements. The common background requires at least 21 semester hours of business courses to develop general breadth and competence in the fields of business administration. These requirements may differ among degree programs. The common background requirements may be satisfied by equivalent graduate level work, or through undergraduate course work as approved by the advisor. Generally, an undergraduate degree in business administration from an AACSB accredited university will meet most of those requirements. The graduate core requires at least 30 semester hours of graduate level courses as prescribed by the different major programs. Of the 30 hours, a minimum of 18 hours must be at the 6000 level.

Master of Science in Accounting

Advisors: Michael Firth Telephone: 628-1220

The Master of Science in Accounting is a flexible program that provides the student with a thorough understanding of both financial and managerial accounting. The combination of required and elective courses allows the student to design a course of study with the advisor’s approval, leading to a successful career in either public accounting, governmental or non-profit accounting, or management accounting.

The M.S. in accounting requires the completion of components A, B, and C as shown below:

A. COMMON BACKGROUND COURSE WORK

Courses Required Semester Hours
ACCT 2100. Introduction to Managerial Accounting 3
ACCT 2120. Introduction to Financial Accounting 3
BUSN 6020. Quantitative Business Analysis 3
BUSN 6060. Marketing Management 3
BUSN 6040. Human Behavior in Organizations 3
BUSN 6120. Managerial Economics 3
BUSN 6140. Financial Management 3
BLAW 3000. Business Law 3
TOTAL .............................................. 24

It may be possible to satisfy some of these requirements with other graduate or undergraduate course work with the approval of the advisor.

It is recommended that students should have a minimal competency in mathematics and computer software applications. Possible courses at CU-Denver are ISMG 3000, CSC 1100, CSC 1410, and MATH 1070, 1080. The required courses in Parts B and C (below) will also help meet these objectives. Self-study or review (workshops) also may be used to attain minimal competency levels.

B. ACCOUNTING COURSES BACKGROUND

Courses Required Semester Hours
ACCT 3220 and 3230. Intermediate Financial Accounting, I and II 6
ACCT 3320. Intermediate Cost Accounting 3
ACCT 4410 and 4420. Income Tax and Advanced Income Tax Accounting 6

C. GRADUATE CORE IN ACCOUNTING

Courses Required Semester Hours
ACCT 6250. Seminar: Accounting Theory 3
ACCT 6260. Seminar: Managerial Accounting 3
ACCT “core.” Any 2 advanced accounting courses (numbered higher than ACCT 6260) 6
BUSN 6100. Management Information Systems 3
Sub total .............................................. 15
Electives. (5) Five elective courses may be selected 15
Total Graduate Core Semester Hours 30

Certain graduate courses in accounting are offered only once a year. Consult a current Schedule of Classes for information about current course offerings. Note that ACCT 5540 and 6250 are usually offered in the fall and other advanced courses are usually offered in the spring.

Comprehensive Examinations. No comprehensive examinations are required in the major field of accounting.

Master of Science in Finance

Advisor: E. Woodrow Eckard, Jr. Telephone: 628-1297

The M.S. degree in Finance provides the student with the necessary specialized expertise in the field to meet the need of businesses for staff specialists, and to prepare the student for further graduate work in the field of finance.
The M.S. program in finance consists of two components—the common background and the graduate core required courses.

A. COMMON BACKGROUND COURSE WORK

<table>
<thead>
<tr>
<th>Courses Required</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSB 6000. Accounting for Managers</td>
<td>3</td>
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<td>BUSB 6020. Quantitative Business Analysis</td>
<td>3</td>
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<tr>
<td>BUSB 6040. Human Behavior in Organizations</td>
<td>3</td>
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<tr>
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<td>3</td>
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<tr>
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<td>3</td>
</tr>
<tr>
<td>BUSB 6160. Legal and Ethical Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>BUSB 6180. Economic Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>Total Semester Hours Required</td>
<td>21</td>
</tr>
</tbody>
</table>

It may be possible to satisfy some of the common background requirements by other graduate or undergraduate course work, with the approval of an advisor.

B. GRADUATE CORE IN FINANCE

The M.S. finance core will consist of 30 semester hours (10 courses) beyond the common background requirements. At least six of these 30 semester hours must be at the 6000 level or higher. A minimum of 21 semester hours (7 courses) must be chosen from regularly scheduled graduate finance courses (excluding independent study); the remaining 9 semester hours (3 courses) may be in finance or in related fields, as approved by the student’s M.S. advisor in finance. A student can elect to include a minor field with at least 9 semester hours approved by a minor field advisor, but a minor is not required.

The 21 hour finance requirement is met by the following requirements and options:

1. Required Courses  
<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSN 6140. Financial Management</td>
</tr>
<tr>
<td>FNCE 6310. Decisions and Policies in Financial Management</td>
</tr>
<tr>
<td>FNCE 6330. Investment Management Analysis</td>
</tr>
</tbody>
</table>

2. Choose at least 4 courses in finance from the list of regularly scheduled graduate classes in this catalog in consultation with the graduate advisor.

Notes and Restrictions

BUSN 6140 can be waived if a student has taken at least 9 semester hours of upper division undergraduate finance courses within the last 5 years from an AACSB accredited university. However, the student must still take at least 21 hours in finance at the graduate level. The 9 semester hours (3 course) requirement, beyond the minimum 21 hours (7 courses) of finance courses, can include courses related to the finance major as approved by the M.S. advisor. Areas of study that normally would enhance the study of finance would include economics, mathematics, statistics, accounting, information systems, and computer science. Other fields also could be approved based on the student’s needs and objectives.

No comprehensive examination in finance is required.

Master of Science in Health Administration

Advisor: Richard W. Foster  
Telephone: 628-1286

The goal of the Master of Science in Health Administration (M.S.H.A.) degree is to prepare men and women who, after appropriate practical experience in responsible managerial positions, are capable of assuming positions as chief executive officers or senior administrators in complex, multi-service health care organizations or in organizations’ purchasing and health services.

The curriculum is a synthesis of management concepts and techniques that are applicable to any economic organization and tools that can be specifically applied to health and health services systems. The program emphasizes skills which heighten basic analytic and decision-making processes used by top level managers in selecting broad strategies for the institutions and by junior managers in administering sub-units of health care organizations. The faculty guide the students in their mastery of theoretical, conceptual, and quantitative topics.

The M.S.H.A. program has enjoyed continued accreditation by the Accrediting Commission on Education for Health Services Administration (ACEHSA) since 1970.

The typical course of study is 57 semester hours of graduate level course work for students entering without an undergraduate degree in business from an AACSB accredited program. The curriculum is based on a series of structured learning sequences with M.B.A. courses comprising the majority of the first full year, supplemented by several core health administration courses. It may be possible to satisfy some of the common background requirements with other graduate or undergraduate course work.

Students should discuss their options with an advisor.

The second academic year provides the student with advanced training in health administration. Within the 57 semester hours, the student must choose 9 semester hours of elective courses.

Required Business Core Courses  

<table>
<thead>
<tr>
<th>Hours</th>
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<tbody>
<tr>
<td>BUSN 6000. Accounting for Managers</td>
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<td>BUSN 6080. Management of Operations</td>
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<td>BUSN 6100. Management Information Systems</td>
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<td>BUSN 6120. Managerial Economics</td>
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<tr>
<td>BUSN 6140. Financial Management</td>
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<tr>
<td>BUSN 6200. Business Policy and Strategic Management</td>
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</tbody>
</table>

Required M.S.H.A. Core Courses  

<table>
<thead>
<tr>
<th>Hours</th>
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<tbody>
<tr>
<td>HLTH 6010. Medical Care Organization</td>
</tr>
<tr>
<td>HLTH 6020. Health Economics</td>
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<tr>
<td>HLTH 6025. Institutional Management</td>
</tr>
<tr>
<td>HLTH 6030. Health Sciences</td>
</tr>
<tr>
<td>HLTH 6040. Management Accounting for Health Care Organizations</td>
</tr>
<tr>
<td>HLTH 6050. Legal and Ethical Problems in Health Care Administration</td>
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</tbody>
</table>

Electives  

<table>
<thead>
<tr>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLTH Electives</td>
</tr>
<tr>
<td>Free Electives</td>
</tr>
<tr>
<td>Total Semester Hours</td>
</tr>
</tbody>
</table>

Electives. Elective courses are available in the fields of accounting, finance, marketing, management, organizational development, health policy and planning. In addition, elective courses are available that focus on practice settings such as hospital administration, ambulatory care administration, or long-term care administration.

Management Residency. A management residency is optional, but recommended for all students, especially those with limited health care experience. The faculty of the program provide assistance to students in securing the residency, as well as regular consultation during the residency period. Information on the full range of local, regional, and national residencies is available in the program office.

Length of Program. The didactic portion of the degree will take at least two academic years since H.A. courses are offered only once each year and many require prerequisites. Part-time study is facilitated by courses being scheduled for late afternoon or evening hours.
ADMISSIONS PROCESS

Requirements for Admission. Selection of students is a multi-step process. When making application to the program for the M.S.H.A., candidates should send their applications to:
- Graduate Admissions
- Graduate School of Business Administration
- University of Colorado at Denver
- Campus Box 165, P.O. Box 173364
- Denver, CO 80127-3364

Credentials or Requirements
1. Completed Application for Graduate Admission Parts I and II.
2. Four letters of recommendation from professional or academic acquaintances who are familiar with the applicant’s academic/professional competence.
3. Satisfactory test score—Graduate Management Admission Test (GMAT) is required. When registering for the GMAT use the code for the University of Colorado at Denver MBA program.
4. $30 application fee.
5. Two (2) official transcripts sent directly from each college or university attended. A minimum baccalaureate degree is required.
6. A well formulated career plan articulated in a brief essay, and summarizing the applicant’s reason(s) for seeking the degree.
7. Experience in the field of health services administration (preferred but not absolutely necessary). Admission to the M.S.H.A. degree program is on a competitive basis. Therefore, these admission criteria represent minimum entrance qualifications expected of all students.

Deadlines. All credentials should be submitted at the latest by July 1 for Fall Semester, November 1 for Spring Semester, and April 1 for Summer Term. Applications will be reviewed in the order they are received. Early application increases the probability of acceptance.

For further information, brochures, and application materials, contact the Graduate Program in Health Administration, Graduate School of Business Administration, University of Colorado at Denver, (303) 628-1276.

HEALTH ADMINISTRATION SCHOLARSHIPS/LOANS

Financial assistance is available for new and continuing students directly from the Graduate Program in Health Administration. Each year the following scholarships/loans may be awarded:
- Eugene Sonntag Award
- Kaiser-Permanente Scholarship
- Residency
- Continuing Student Scholarship
- Foster G. McGaw Scholarship Loan Fund
- Foster G. McGaw Scholarship
- Federation of American Hospitals' Foundation
- Colorado Health Administration Alumni Association Scholarship Fund
- U.S. Dept. of Health and Human Services Traineeships

In addition, students are eligible to apply for financial aid directly from the University of Colorado Financial Aid Office. Call 556-2886.

Master of Science in Information Systems

Advisor: James Gerlach
Telephone: 628-1250

The Master of Science degree in information systems prepares students for management roles in the information systems field and for such careers as systems analysts, software engineers, data base administrators, and data processing managers. The curriculum emphasizes the application of computer technology within the business context.

The M.S. degree requires the student to complete the common background courses and the graduate core described below.

A. COMMON BACKGROUND COURSE WORK

<table>
<thead>
<tr>
<th>Courses Required</th>
<th>Semester Hours</th>
</tr>
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<tbody>
<tr>
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<td>3</td>
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<td>BUSN 6020, Quantitative Business Analysis</td>
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<tr>
<td>BUSN 6040, Human Behavior in Organizations</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6060, Marketing Management</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6120, Managerial Economics</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6140, Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6160, Legal and Ethical Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>Total Semester Hours</td>
<td>21</td>
</tr>
</tbody>
</table>

All students admitted to the M.S. in information systems should possess computer literacy at least equivalent to that attained by taking ISMG 2200 or CSC 1410.

It may be possible to satisfy some of the common background requirements with other graduate or undergraduate course work, with the approval of the advisor.

B. GRADUATE CORE IN MANAGEMENT SCIENCE AND INFORMATION SYSTEMS

Thirty semester hours of approved graduate work are required. Each student’s plan of study is developed by the student and the faculty advisor, considering the student’s interests and background. The 30 semester hours may be taken entirely in information systems and closely related areas or may be divided between information systems (21 hours) and a minor field (9 hours). At least 7 courses (21 hours) must be taken in information systems. Courses available for the major include:
- BUSN 6100. Management Information Systems
- ISMG 6020. Business Programming and Data Structures
- ISMG 6060. Systems Analysis and Design I
- ISMG 6080. Data Base Management Systems
- ISMG 6100. Computer Technology
- ISMG 6120. Data Communication
- ISMG 6140. Systems Analysis and Design II
- ISMG 6180. Information Systems Policy
- ISMG 6800. Special Topics
- ISMG 6840. Independent Study
- ISMG 6950. Master’s Thesis

All of the above courses are 3 semester hours except ISMG 6840, which is variable credit. A required course may be waived based on a faculty advisor’s signature, but must be replaced with an information systems course. Minor fields may be chosen from a variety of business and non-business areas, in consultation with the student’s advisor. A maximum of 6 semester hours of approved graduate work at other institutions may be included in the 30 semester hours. For business-related courses, the program must be accredited by the AACSB. Candidates for the M.S. degree are not required to take a comprehensive examination or to complete a thesis in the major field.

Master of Science in Management and Organization

Advisor: W. Graham Astley
Telephone: 628-1237

The objective of the Master of Science in Management and Organization program is to prepare individuals with prior work
experience for significant managerial responsibilities in private and public sector organizations. The program provides students with a basic understanding of how to manage interpersonal dynamics, effectively design organizations, implement planned change, and develop and maintain the human resources necessary for effective performance. It also provides students with the opportunity to learn about specific managerial problems and issues, such as how to turn around poorly performing organizations, implement new technologies, etc. The degree is particularly appropriate for students having an undergraduate degree in a functional area of business, such as accounting, finance, information systems, or in a technical area, such as engineering or computer science.

The Master of Science in Management and Organization consists of two components: the common background and the specialized courses that constitute the graduate core.

A. COMMON BACKGROUND COURSE WORK

Students in the M.S. in management and organization program can satisfy the common background requirements by taking the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSN 6000. Accounting for Managers</td>
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<tr>
<td>BUSN 6020. Quantitative Business Analysis</td>
<td>3</td>
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<tr>
<td>BUSN 6060. Marketing Management</td>
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<tr>
<td>BUSN 6100. Management Information Systems</td>
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<tr>
<td>BUSN 6120. Managerial Economics</td>
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<tr>
<td>BUSN 6140. Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6160. Legal and Ethical Environment in Business</td>
<td>3</td>
</tr>
<tr>
<td>Total Semester Hours</td>
<td>21</td>
</tr>
</tbody>
</table>

It may be possible to satisfy some of the common background requirements by other graduate or undergraduate course work with the approval of the advisor.

B. GRADUATE CORE IN MANAGEMENT AND ORGANIZATION

The core will consist of 30 semester hours (10 courses) beyond the common background requirements.

At least 7 of the courses must be 6000-level courses. A minimum of 21 semester hours must be chosen from regularly scheduled management courses (excluding independent study).

The remaining 9 semester hours (3 courses) may be in management and organization or in related fields, as approved by the student’s M.S. advisor in management and organization. A student may elect to include a single minor field with at least 9 semester hours approved by a minor field advisor, but a minor is not required.

The 21-hour requirement is met by the following requirements and options:

C. MANAGEMENT AND ORGANIZATION ELECTIVES

Choose at least 9 hours of course work from the selections offered under the course designation MGMT 6800, Special Topics in Management. Usually, two MGMT 6800 sections will be offered each semester. Consult with the advisor for the year’s special topics offerings.

Students can substitute a 6000-level management course for BUSN 6040 if they have taken an equivalent upper division organizational behavior course within the last five years from an AACSB accredited university. In that case, students must complete 21 hours of management courses.

The 9 hour minor, if a student should choose to complete a minor, may be taken in another functional area of business, such as marketing, finance, management science and information systems or in another related discipline, such as psychology, sociology, or public administration. Other fields or combinations of courses can be approved based on a student’s needs and career objectives.

Students are not required to take a comprehensive examination or complete a thesis in the major field.

Master of Science in Marketing

Advisor (for general academic advising):
Susan M. Keaveney
Telephone: 628-1221

Students with specific questions concerning formal requirements, degree plans, etc. should consult an advisor in the graduate programs office (628-1276) rather than the faculty advisor.

The objective of the Master of Science in Marketing is to prepare individuals with prior work experience for significant management responsibilities in the field of marketing, either in the private or the public sector. The degree is particularly appropriate for individuals who have an undergraduate degree in business.

The degree consists of two components: the common body of knowledge and the specialized courses that constitute the core of the M.S. in marketing.

A. COMMON BODY OF KNOWLEDGE

Students in the program must satisfy the AACSB Common Body of Knowledge requirements. These are met by the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSN 6000. Accounting for Managers</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6020. Quantitative Business Analysis</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6040. Human Behavior in Organizations</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6100. Management Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6140. Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6160. Legal and Ethical Environment in Business</td>
<td>3</td>
</tr>
<tr>
<td>BUSN 6180. The Economic Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>Total Semester Hours</td>
<td>21</td>
</tr>
</tbody>
</table>

It may be possible to satisfy some of these requirements with other graduate or undergraduate course work. Contact a graduate student advisor for information.

B. GRADUATE CORE IN MARKETING

The M.S. in Marketing requires 30 semester hours beyond the Common Body of Knowledge. Twenty-one (21) semester hours must be in marketing at the 6000 A level. The remaining 9 semester hours may be in marketing or in related fields as approved by the student’s advisor. A student may elect to take these 9 semester hours in a single minor field. However, a minor is not required.

(Note: a minimum of 18 of the required 30 semester hours must be taken in courses reserved exclusively for graduate students.)

The 21 semester hour marketing requirement is met by the following requirements and electives:

Required Courses—9 hours
<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSN 6060. Marketing Management</td>
<td>3</td>
</tr>
</tbody>
</table>

Students with extensive undergraduate course work in marketing may petition to substitute a marketing elective for BUSN 6060.

MKTG 6010. Marketing Strategy, Evaluation, and Development
methods to provide students with tools useful in their present positions and applicable to more advanced responsibilities as they progress in their management careers. The Executive Program consists of four semesters over twenty-two months. It begins the last week of August and runs through mid-June for two years. Classes meet for a full day, once a week, on alternating Fridays and Saturdays, making it possible for those who live outside the Denver area to participate.

Two courses are taken simultaneously throughout the program. The program is supplemented by an intensive seminar orientation at the beginning, and a two-day seminar at the conclusion of the first academic year. A second-year seminar is held at an international business center.

FACULTY AND RESOURCES

The faculty are senior members of regular faculty of the Graduate School of Business Administration from all three of the University's campuses. The Executive M.B.A. Program is offered jointly by the Graduate Schools of Business Administration in Boulder, Colorado Springs, and Denver. Faculty are nationally recognized, and all possess both practical managerial experience and a demonstrated ability to work effectively with executive-level students.

ADMISSION REQUIREMENTS

The Executive M.B.A. Program is designed for men and women who have ten years of business or administrative experience, including at least three years in a managerial position. Applicants should be part of senior management in a small organization or senior or middle management in a larger one, hold at least a baccalaureate degree, and have the ability to do graduate work.

In the selection process, significant attention will be given to the depth and breadth of the candidate's managerial experience, progression in job responsibility, total work experience, and ability to benefit from this integrative classroom/work environment. The Admissions Committee will base its decision on the applicant, former academic record, relevant test scores, the employer's nominating letter, other letters of recommendation, and a personal interview.

FOR APPLICATION AND ADDITIONAL INFORMATION:

Executive M.B.A. Program
Graduate School of Business Administration
University of Colorado
P.O. Box 480006
Denver, CO 80248-0006.

Executive Program in Health Administration
Administrative Director:
Dennis M. Becker
Telephone: (303) 623-1888 or
(800) 228-5778

PROGRAM SPONSORS

The Executive Program in Health Administration is a cooperative program of the University of Colorado at Denver and the Western Network for Education in Health Administration. The University of Colorado at Denver serves as the degree-granting institution for the Executive Program. The University of Colorado's Graduate Program in Health Administration is located in the Graduate School of Business Administration.

The Western Network for Education in Health Administration is a regional educational consortium representing health care executives and academic faculty from major health administration graduate programs in the western United States, including the University of California at Berkeley, University of California at Los Angeles, University of Southern California, San Diego State University, University of Washington, Arizona State University, and University of British Columbia.

DISTINCTIVE FEATURES OF THE EXECUTIVE PROGRAM IN HEALTH ADMINISTRATION

1. Drawing on the expertise represented by the faculties of a consortium of western universities, the program offers the highest quality course content and instructors that typically are not available from a single university.

2. The Executive Program facilitates learning for professionals who have continuing career and family responsibilities. The program is especially tailored for working individuals, allowing students to remain on their jobs while completing their educational program.

3. The program employs innovation in the technology of educational delivery. Learning methods include:
   • Computer-assisted instruction and self-paced learning packages.
Dual Degree Programs

M.S.H.A./M.B.A.

Students may obtain the M.B.A. degree as well as the M.S.H.A. by completing a 66 credit hour program. In addition to the courses required for the M.S.H.A., students also must complete the following:

Additional Business Core Courses
BUSN 6160. Legal and Ethical Environment of Business ............... 3
BUSN 6180. Economic Environment of Business .................. 3

The dual degree program also requires an additional 3 credit hours of electives and places additional restrictions on how electives may be taken.

Electives
One graduate course from each of three of the five following areas: Accounting, Finance, Management Science and Information Systems, Operations Management, or Marketing ............... 9
HLTH Elective ........................................ 3

M.B.A./B.A.

This program enables qualified students to earn a bachelor’s degree from the College of Liberal Arts and Sciences (CLAS), and a Master of Business Administration from the Graduate School of Business Administration in five years. The program combines undergraduate general education with the graduate business curriculum.

Bachelor’s candidates may major in any CLAS field (English, political science, biology, or fine arts are examples), and they must fulfill all the requirements for graduation from CLAS. During the senior year, the student begins taking graduate level courses in the M.B.A. program; these courses count as electives in the bachelor’s program.

For further information about this program and the admission requirements, contact the College of Liberal Arts and Sciences Advising Office.

M.B.A./M.S. – NURSING ADMINISTRATION

The goal of the dual degree program (M.B.A./M.S. – Nursing Administration) is to prepare nurses who are capable of assuming senior level and CEO health administration positions in government, consulting, traditional health care organizations, and alternative delivery systems. The 66 credit curriculum is a synthesis of advanced management, health administration, and nursing content.

For information contact the program director in nursing administration, 394-8136.

M.B.A./M.S.

The Graduate School of Business Administration also offers M.B.A./M.S. dual degree programs for each function of business. Each program consists of a minimum of 66 semester hours of graduate work and leads to both an M.B.A. degree and an M.S. degree, which must be completed within seven years. Contact a graduate advisor for details.

M.B.A./M.A. – PSYCHOLOGY

Students may enroll in a dual degree program to earn both the M.B.A. from the Graduate School of Business Administration and the Master of Arts in Psychology from the College of Liberal Arts and Sciences. This program requires the completion of 67 credit hours. Contact a graduate advisor for details.

GRADUATE COURSES

M.B.A. Core or M.S. Common Background Courses

The following graduate courses are open only to admitted graduate degree students.

BUSINESS

BUSN 6000-3. Accounting for Managers. Fall, Spring, Summer. This course focuses on the use of accounting information in managerial decision making. Primary emphasis for the first half of the course will be on interpretation of financial statements, understanding accounting conventions and principles underlying the preparation of the statements, and current controversies regarding generally accepted accounting principles. The remainder of the course will stress managerial uses of accounting techniques such as budgeting, cost, volume, profit models, and performance measurement.

BUSN 6020-3. Quantitative Business Analysis. Fall, Spring, Summer. This course will provide the student with basic quantitative analysis tools and techniques necessary for the analysis of business related problems. Topics covered include statistics, probability, sampling, regression, inference testing, and additional topics such as correlation, contingency tables, non-parametric techniques, and time series analysis.

BUSN 6040-3. Human Behavior in Organizations. Fall, Spring, Summer. This course focuses on applications of behavioral science concepts to the management of organizations. This course emphasizes analysis and understanding of human behavior in organizations, and using the results of such analyses to select appropriate strategies for managing. The course includes topics such as motivation, leadership, power and conflict, group dynamics, technology, organizational design, and other factors affecting human performance. Special emphasis is placed on concepts used by managers in all functional areas of organization, such as accounting, production, finance, marketing, and engineering.

BUSN 6060-3. Marketing Management. Fall, Spring, Summer. The course has two major objectives for the students: (1) understanding basic marketing concepts involving buyer behavior, product planning, pricing, channels for distribution and promotion, and (2) developing marketing decision-making capabilities based on strategic management and analytical skills. The overall objective is to integrate all the functional aspects of marketing with other functional areas of the firm and with the environment, particularly consumption markets, competition, the economy, legal and regulatory environment, and social evolution. Prereq: BUSN 6000.

BUSN 6080-3. Management of Operations. Fall, Spring, Summer. This course will study the tools and techniques of the management of the operations functions in business organizations. Topics covered will include resource management, linear programming, decision trees, scheduling and control systems, quality assurance techniques, productivity measurement, simulation, and the international elements of the operations function. Significant attention will be devoted to study of the application of these tools to service organizations. Prereq: BUSN 6020.
BUSN 6100-3. Management Information Systems. Fall, Spring, Summer. This course provides an introduction to information systems from a managerial perspective. Topics include basic computer concepts such as hardware, software, data file design, structured computer languages, systems analysis and design, and decision support systems. Managerial, organizational and decision-making implications are stressed. BUSN 6120-3. Managerial Economics. Fall, Spring, Summer. This course introduces the student to the usefulness of microeconomic theory at the firm level. Through economic analysis, output demand and cost characteristics can be evaluated, thereby allowing for production and marketing decisions consistent with overall firm goals. An additional focus is the operation of competitive economic markets and the effects of such competition on the firm. Topics include cost and price theory, demand estimation and forecasting, production theory, and pricing practices. The course is also designed to aid students' understanding of the business manager's role in light of organizational and societal objectives. Prereq: BUSN 6000 and 6020.

BUSN 6140-3. Financial Management. Fall, Spring, Summer. The purpose of this course is to introduce the student to the tools and techniques for making a firm's investment and financing decisions. These include the mathematics of interest, risk analysis, financial theory of valuation, capital budgeting, cost of capital, and financial analysis. The emphasis is on developing an analytic framework for financial decision making. The class utilizes current literature, text, and cases. Prereq: BUSN 6000, 6020, and 6120.

BUSN 6160-3. Legal and Ethical Environment of Business. Fall, Spring, Summer. This course focuses on public, administrative, and regulatory law, and on the relation of business to the legal structure and ethical value systems which determine the parameters of business decisions. Topics include litigation, domestic and multinational trade regulation, the allocation of liability for products and environmental injuries, consumer and employee protection, regulation of capital markets, and business torts.

BUSN 6180-3. Economic Environment of Business. Fall, Spring, Summer. This course provides the student with an understanding of how economic policy affects and is affected by the national and international economic environment of business. As such, it focuses on the interaction of business and government so that it relates to broader societal objectives. Measures of aggregate economic activity are introduced as a basis for discussion of monetary and fiscal policy. Concerns over economic growth, employment, prices, and interest rates are seen as motivations for stabilization and industrial policy. Market power, economic externalities, and other market failures are studied as motivations for antitrust policy and regulation of industry entry conditions, product pricing, and production methods. Prereq: BUSN 6120.

BUSN 6200-3. Business Policies and Strategic Management. Fall, Spring, Summer. The goal of this course is to develop a general management perspective on issues of management of the total enterprise. An important objective is the integration of knowledge acquired across functional area courses. Objectives of the course include the introduction of strategic concepts, analytical tools, and methodology. The primary focus is to provide the student with both strategy formulation and implementation skills. Prereq: BUSN 6000, 6020, 6040, 6060, 6080, 6100, 6120, 6140, 6160, and 6180.

M.B.A. Electives/M.S. Courses

ACCOUNTING


ACCT 5620-3. Auditing. Fall, Spring, Summer. Generally accepted auditing techniques and the philosophy supporting them; auditing techniques available to the independent public accountant. Pertinent publications of the AICPA reviewed. Prereq: ACCT 3230 or 6030.


ACCT 6070-3. Management Accounting. Fall, Spring. This course is designed to provide M.B.A. Students with a foundation in management accounting models and information, with emphasis on management decision-making uses of accounting information. Not recommended for candidates planning to sit for the CPA examination. Prereq: BUSN 6000 or equivalent. Students who have taken ACCT 3310 or 3320 or their equivalents may not take this course.

ACCT 6140-3. Tax Planning for Managers. Spring. A federal tax survey course with an emphasis on tax planning for the M.B.A. student who wants to understand the impact of taxation on individual and business transactions. Course materials emphasize the application of individual, partnership, and corporate tax principles to the decision-making process. Students who have taken ACCT 4410 may not take this course. Prereq: BUSN 6000.


ACCT 6260-3. Seminar: Managerial Accounting. Spring. This course focuses upon the conceptual foundations of managerial accounting. Behavioral and quantitative approaches regarding information for decision making, planning, control, performance evaluation, and other issues will be investigated. Prereq: ACCT 3320 or 6070 or equivalent.


ACCT 6290-3. Management Control Systems. This course focuses on the design and use of control systems which ensure that people in organizations behave consistent with the goals of the...
organization. Controls for communication, motivation, and performance evaluation—along with informational requirements—will be stressed through analysis of cases and classroom discussion.

Prereq: BUSN 6000 or equivalent.

**ACCT 6350-3. Current Issues in Professional Accounting.** In-depth analysis of current issues in the accounting profession, including ethics development, and validity of standards and regulations. Prereq: ACCT 5250 and 4620 (or 5620) or consent of instructor.

**ACCT 6410-3. Advanced Tax for Individuals.** An advanced federal individual income tax course stressing the methodology used in tax research and in tax planning. Includes use of specialized tax software to address compliance with planning issues by solving complex case type real-life situations. Prereq: ACCT 4410.

**ACCT 6420-3. Advanced Tax for Businesses.** An advanced federal tax course stressing research and tax planning issues of corporate and partnership entities. Includes use of specialized tax software to address compliance and planning issues by solving complex case type real-life situations. Prereq: ACCT 4420.

**ACCT 6450-3. Research Problems in Income Tax Accounting.** A study of the methodology used in tax research and in tax planning, together with a study of some aspects of tax administration and tax practice, and of some aspects of the current law and proposals for its revision. Prereq: ACCT 4410 or 6410 or 6420 or consent of instructor.

**ACCT 6620-3. Advanced Auditing Theory.** Spring. Development of auditing as a profession, including evolution of standards and audit reports. Historical and contemporary literature in the field reviewed. Prereq: ACCT 4620 or 5620.

**ACCT 6800-3. Special Topics.** Research methods and results, special topics, and professional developments in accounting. Prerequisites vary according to topics and instructor requirements. Consult the current Schedule of Classes for semester offerings.

**ACCT 6840-1 to 8. Independent Study.** 

**FINANCE**

**FNCE 6310-3. Decisions and Policies in Financial Management.** Fall, Spring. This course emphasizes investment and financing decisions, and the analysis of the financial condition of the firm. Specific topics include capital budgeting, cost of capital, financing mix and strategy, firm valuation, and management of working capital. This course is required for the M.S. in finance. Prereq: BUSN 6140.

**FNCE 6330-3. Investment Management Analysis.** Fall, Spring. The theory of investment management, security valuation, and portfolio management, including the analysis of investment risks and constraints on investment policies and objectives. Also includes the analysis and use of investment information; and the development and application of the tools for determining security values. Required for the M.S. in finance. Prereq: BUSN 6140 and 6180.

**FNCE 6340-3. Security Analysis.** This course focuses on the analysis of the financial condition of the firm, valuation of debt and equity securities, and the selection of investment media for portfolios. Prereq: FNCE 6330.

**FNCE 6350-3. Financial Innovations.** This course focuses on financial innovations in fixed income securities including zero coupon instruments, floating rate instruments, collateralized mortgage obligations, stripped mortgage backed securities, eurobonds, interest rates and currency swaps. How these securities are priced in the marketplace and how they respond to changes in the market interest rate are the focus of the course. In addition, the course covers how these securities fit into a portfolio of fixed income securities, why they were invented and who is likely to find them attractive. Prereq: FNCE 6330.

**FNCE 6360-3. Management of Financial Institutions.** Fall, Spring. This course presents an analysis of structure, markets, regulation, chartering of commercial banks and other financial institutions. Topics include problems and policies of the internal management of funds, loan practices and procedures, movement behavior, deposit and capital adequacy, liquidity, and solvency. Analytical methodology for these problems is developed. Prereq: BUSN 6140 and 6180.

**FNCE 6370-3. International Financial Management.** Fall, Spring. This course addresses financial management in an international context that considers international capital movements and foreign exchange problems, and international operations as they affect the financial functions. It reviews foreign and international institutions and the foreign exchange process. Considers financial requirements, problems, sources, and policies of firms doing business internationally. Prereq: BUSN 6140.

**FNCE 6380-3. Futures and Options.** Fall, Spring. The course explains how futures are related to the underlying commodities; describes how to hedge, and what pitfalls to watch for. Stock index futures and interest rates futures get particular attention. How options are priced, how they perform and how to judge whether an option is expensive or cheap will be covered. Bull spreads, bear spreads, straddles and strangles-popular strategies that option traders use—will be discussed. Prereq: FNCE 6330.

**FNCE 6390-3. Advanced Finance Seminar.** This course is an advanced survey of the theory of finance and the empirical research developed from the theory. The student will study the quantitative models that are the basis for theory, and the empirical methods that have been used to confirm or disprove the hypothesis presented by the theory. The material will be presented through lectures and will be supplemented with student research, presentations, and recitation. This course is recommended for students preparing for Ph.D. programs in finance. Prereq: FNCE 6310 and 6330.

**FNCE 6800-3. Special Topics.** Experimental course offered irregularly. Prerequisite for presenting a new subject matter in finance. Prerequisites will vary, depending upon topics covered. Consult the current Schedule of Classes for course offerings.

**FNCE 6840-1 to 8. Independent Study.** 

**HEALTH ADMINISTRATION**

**HLTH 6010-3. Medical Care Organization.** Fall. An introduction to the structure and function of the medical care delivery system. Includes basic concepts and measures of health, disease, quality, values, needs, and utilization; issues in health care manpower, institutions, and system organization; general issues in policy, reimbursement, and regulation; and broad community and organizational considerations in medical care organization.

**HLTH 6015-3. General Systems Theory.** Fall. General systems theory is presented as a conceptual tool in health administration. Health is viewed as a subsystem of society, and interfaces among health and other social subsystems are analyzed. Broad social and cultural issues form a context for meaningful discussion of health planning and administration in the current and future decades.

**HLTH 6020-3. Health Economics.** Fall. An intensive analysis of issues in health economics. Particular attention is given to "market failure" in health insurance and to...
alternative methods of containing health care costs, including both regulatory and market approaches. Prereq: BUSN 6120.

**HLTH 6026-3. Institutional Management. Spring.** A colloquium designed to integrate major topics in the general management curriculum into relevant health administration issues. Current policies, problems, and issues across the broad spectrum of health service administration are covered. Prereq: HLTH 6010, 6015, 6020, 6030.

**HLTH 6030-3. Health Sciences. Fall.** This course introduces the student to principles of epidemiology. The student will demonstrate the application of epidemiology analyses to the prediction of health care service needs of a population; to identify and integrate contemporary service delivery issues such as access, quality of care, cost of care, program and system development, and evaluation. The course will assist the student in development of program planning and evaluation skills. Prereq: HLTH 6010 and BUSN 6020.

**HLTH 6040-3. Management Accounting for Health Care Organizations. Spring.** Designed to build on the accounting concepts introduced in BUSN 6000 and to develop proficiency in the design, implementation, administration, and evaluation of ambulatory care delivery systems. Knowledge representation and analysis of variances. Prereq: BUSN 6000, 6020 or consent of instructor.

**HLTH 6050-3. Legal and Ethical Problems in Health Care Administration. Spring.** Designed to acquaint the student with legal issues experienced by the health administrator. Special emphasis is placed on issues such as malpractice, informed consent, medical staff appointments, directors and administrators' liability, medical records, and refusal of treatment. The course should make the student aware of the multitude of legal and ethical problems which confront the health administrator on a daily basis. Prereq: HLTH 6010.

**HLTH 6630-3. Management Control in Non-Profit Organizations.** This course is designed to develop a basic understanding of the management control process and the unique characteristics of non-profit organizations. Topic areas include budgeting, programming, operational control, and pricing policies. Cases will be the primary means to integrate didactic materials with practical applications. Prereq: HLTH 6040 or equivalent or consent of instructor.

**HLTH 6650-3. Advanced Topics in Health Care Financial Management.** The primary focus of this course will be an in-depth research report on a current problem in health care financial management. A health care simulation exercise will be utilized to integrate the financial management concepts introduced in the preceding accounting and finance courses. Prereq: HLTH 6040 or consent of instructor.

**HLTH 6720-3. Ambulatory Care Administration.** The health administration student is exposed to the rapidly developing field of ambulatory care and HMO management. By examination of various ambulatory care and HMO settings, problems in the planning, implementation, administration, and evaluation of ambulatory care are developed. Prereq: HLTH 6010, or consent of instructor.

**HLTH 6740-3. Multi-Institutional Management.** Multi-institutional management is a developing trend in health administration. Students are exposed to both profit and non-profit hospital, nursing home, etc., networks. Shared services, merger, management contracts, hospital acquisitions, and satellite clinics are studied and discussed. Prereq: HLTH 6010 or consent of instructor.

**HLTH 6760-3. Rural Health Systems.** Introduces the student to the history and evolution of rural health care in the United States. Also to be examined are past attempts to improve rural health and the impact of past national programs affecting rural health. The present status of rural health in the U.S. will be explored. The course will end with a review of private, local, state, and federal programs directed toward solutions for rural health problems. Prereq: Consent of instructor.

**HLTH 6780-3. Health Care Marketing.** The application of marketing concepts and techniques to health care delivery. Discussion will focus on the implications of a changing regulatory/competitive environment for marketing health services. The use of specific concepts and tools, and an understanding of the variety of marketing applications to the planning of health delivery systems. Prereq: BUSN 6060 or consent of instructor.

**HLTH 6800-3. Special Topics.** Research methods and results, special topics, and professional developments in health administration. Offered irregularly. Pre-requisites vary according to topics and instructor requirements. Consult the current Schedule of Classes for semester offerings.

**HLTH 6840-1 to 8. Independent Study.**

**HLTH 6950-1 to 8. Master's Thesis.**

**INFORMATION SYSTEMS**

**ISMG 6020-3. Business Programming and Data Systems. Fall, Spring.** An accelerated introductory course on programming business applications, with emphasis on file processing. Topics include COBOL and Pascal programming languages.

**ISMG 6060-3. Systems Analysis and Design I. Spring.** This course emphasizes information systems analysis and the logical specification of the system. The life cycle concept is used as the basic framework for development, but there is a recognition of alternatives in this development process. Management, organizations, technology and economic perspectives are considered. Prereq: ISMG 6020 and BUSN 6100. Students will normally use a case tool to develop systems specifications.

**ISMG 6080-3. Database Management Systems. Spring.** The database management course focuses on the analysis, design, and implementation of database systems to support business operations. Current database models and database administration issues are discussed. The INGRESS database language is covered in detail. Prereq: ISMG 6020.

**ISMG 6100-3. Computer Technology. Fall.** This course provides a conceptual foundation in the areas of computer architecture, operating systems, programming translators, and fourth-generation languages. Students will study various computer architectures ranging from microcomputers to mainframe computers and operating systems such as Unix, VMS, DOS and OS/VS. Assembly and C programming languages are taught. Prereq: ISMG 6020.

**ISMG 6120-3. Data Communications. Spring.** Develops skill and knowledge for communication system design, dealing with network protocols, wide-area network, local-area network, and management implications. Course has a project orientation. Prereq: ISMG 6100.

**ISMG 6140-3. Systems Design.** This course is designed to provide a strong introduction to the formalization of information systems analysis and design processes and to explore the state of the art in systems specification and design techniques. Topics included are real-time structured analysis and design and object-oriented analysis and design.

**ISMG 6160-3. Decision Support Systems and Expert Systems. Fall.** An introductory course in how to design and construct decision support systems and expert systems. Knowledge representation and decision-making techniques discussed along with artificial intelligence languages.
such as VP-expert and Prolog. Prereq: ISMG 6080.

ISMG 6800-3. Information Systems Policy. Summer. Designed for understanding the overall information needs of an organization and the role of computer based information systems. Topics considered are strategic planning of information systems, management of computer center and technical personnel, systems development management, and social and legal issues. Prereq: BUSN 6060 and 6080.

ISMG 6800-3. Special Topics. Spring. A variety of advanced topics are offered in this course. Past topics include the human-computer interface, software engineering, artificial intelligence and project management. Consult the current Schedule of Classes or the area coordinator for current offerings. ISMG 6840-1 to 8. Independent Study. ISMG 6950-1 to 8. Master's Thesis.

MANAGEMENT

MGMT 6320-3. Organizational Development. Fall, Spring, Summer. Instructs in the analysis, diagnosis, and resolution of problems in organizing people at work. Models of organizational change are examined. Group experiences, analyses of cases and readings are stressed. Prereq: BUSN 6040.

MGMT 6330-3. Introduction International Business. Fall, Spring. An overview of the international business environment, the impact of environmental factors on international business operations, and the identification of current and complex managerial issues facing organizations engaged in international business. Prereq: 9 graduate credit hours or consent of instructor.

MGMT 6340-3. International Business Policy. The objective of this course is to develop competence relevant to strategy formulation and implementation in a multinational enterprise and in an international context. It aims to provide students with the theoretical knowledge, skills and sensitivities that will help them deal effectively with the strategic and managerial problems of managing in a global environment. Prereq: MGMT 6330 and 18 hours in a graduate business program.

MGMT 6360-3. Designing Effective Organizations. Fall, Spring. Examines how to design organizations within the context of environmental, technological, and task constraints. The emphasis is on learning how to recognize and correct structural problems through the analysis of existing organizations in which the students are involved. Prereq: BUSN 6040.

MGMT 6800-3. Special Topics in Management. Fall, Spring, Summer. A number of different current topics in management will be offered each semester under this course number. Please consult the Schedule of Classes for specific course offerings.

MGMT 6810-3. Human Resources Management. Fall, Spring. This course focuses on the management of human resources in organized settings. It is oriented toward the practical application of human resources management principles in the following areas: equal employment opportunity, affirmative action, human resources planning, recruitment, managerial selection, compensation and benefits, labor relations, training, career management, performance appraisal, and occupational health and safety.


MARKETING

MKTG 6010-3. Marketing Strategy, Evaluation and Development. Fall, Spring, Summer. Focuses on marketing strategy and marketing planning. Addresses the formulation and implementation of marketing plans within the context of the overall strategies and objectives of both profit and not-for-profit organizations. There is heavy emphasis on group projects and presentations. Prereq: BUSN 6060.

MKTG 6020-3. International Marketing. Fall, Spring. Explores problems, practices and strategies involved in marketing goods and services internationally. Emphasizes analysis of uncontrollable environmental forces, including cultures, governments, legal systems, and economic conditions, as they affect international marketing planning. Prereq: BUSN 6060.

MKTG 6030-3. Sales and Sales Force Management. Spring. Focuses on issues in personal selling and managing the field sales force. Deals with organization, sales analysis, forecasting, budgeting, and operating, with particular emphasis on the selling task, recruiting, selection, training, compensation, supervision, and motivation. Prereq: BUSN 6060.

MKTG 6040-3. Services Marketing. Fall, Spring. This course will inform students of basic modifications to marketing concepts as the U.S. economy changes in emphasis from physical products to services. It also will distinguish between function, organization, and structure in product versus service orientated firms. Lastly, it will concentrate on identifying difficulties in developing marketing plans and strategies in the service environment. Cases and projects with businesses will be used to demonstrate these concepts. Prereq: BUSN 6060.

MKTG 6050-3. Marketing Research. Fall, Spring. The objectives of this course relate to effective marketing information management. Objectives include: (1) developing an understanding of the techniques and procedures that can be used to generate timely and relevant marketing information; (2) gaining experience in developing and analyzing information that is decision oriented; and (3) gaining experience in making recommendations and decisions based on relevant and timely information. Computer analysis and projects are employed. Prereq: BUSN 6020 and 6060.

MKTG 6060-3. Buyer Behavior. Fall, Spring. Explores theory and application of consumer and industrial buying behavior. Internal decision-making processes are examined including perception, motivation, information processing, and attitude information and change. External influences on buyers' decisions such as culture, family, intra- and inter-organizational influences, and marketing efforts also are investigated. Prereq: BUSN 6060.

MKTG 6070-3. Advertising and Promotion Management. Spring or Summer. Treats tactical planning and management of mass marketing communications including advertising and sales promotion. The course focuses on advertising and promotion objectives, legal considerations, segmentation and target marketing, creative and media selection and scheduling strategies, agency relations, advertising and promotion research, testing and evaluation, budgeting, and trial and purchase stimulation through sales promotion tactics. The focus is on the managerial aspects of marketing communications as opposed to the creative functions. Prereq: BUSN 6060.

MKTG 6080-3. Marketing Function, Organization, and Strategy in Deregulating Industries. Infrequently Offered. This course will deal with the development of the marketing function and competition in a host of deregulating industries including transportation, telecommunications, financial services, and health care. The objective of the course will be to demonstrate to students how marketing functions evolve and change as industries move from a regulatory umbrella to a competitive environment. Students will have an opportunity to see how regulation impacts the marketing function and strategy, and how the marketing strategy and function reacts to environments of limited or full competition. Prereq: BUSN 6060.
MKTG 6090-3. Transportation, Physical Distribution Systems and Modern Economy. Infrequently Offered. This course will deal with the nature of transportation and logistical systems in the current manufacturing and service oriented economy. It will basically teach students the characteristics, economics, and current concerns of transportation systems, as well as the basics of logistical systems as they operate in modern corporations today. It will seek to provide students with concepts of these issues, as well as practical group projects. Prereq: BUSN 6060.

MKTG 6800-3. Topics in Marketing and Transportation. Courses offered irregularly for the purpose of presenting new subject matter in marketing and transportation. Prereq: BUSN 6060.

MKTG 6840-1 to 8. Independent Study.

MKTG 6950-1 to 8. Master's Thesis.

OPERATIONS MANAGEMENT

OPMG 5400-3. Planning and Control Systems. Fall. Study of the design, implementation, and control of integrated operations, scheduling, and inventory planning systems. Topics include demand forecasting, aggregate planning, capacity planning, master scheduling, inventory management, material requirement planning, stockless systems, and operations control. Organizations studied include manufacturing, service and public sector. Prereq: BUSN 6080.

OPMG 5470-3. Strategic Analysis in Operations Management. Spring. Study of the analysis and formulation of operations management strategy and policy. Emphasis will be on the role of the operations function in the strategic processes of the organization. Decision making will be stressed through the use of case studies and the analysis of actual business situations. Prereq: BUSN 6080.


OPMG 6400-3. Planning and Control Systems. Fall. Study of the design, implementation, and control of integrated operations, scheduling and inventory planning systems. Topics include demand forecasting, aggregate planning, capacity planning, master scheduling, inventory management, material requirements planning, stockless systems, and operations control. Organizations studied include manufacturing, service and public sector. Prereq: BUSN 6080.

OPMG 6440-3. Quality and Productivity. Spring. Study of the various techniques to measure quality and productivity in organizations and the practical management issues related to implementing quality and productivity systems. Topics include statistical quality control, total factor productivity, quality circles, total quality control, work design and measurement, and quality and productivity management systems. Prereq: BUSN 6080 and 6040.


OPMG 6900-3. Special Topics. Seldom Offered. A number of different current topics in operations management will be discussed in this course. Consult the current schedule of classes or contact the advisor for further information. Prerequisites will vary depending on topic and instructor requirements.

OPMG 6840-1 to 8. Independent Study.

QUANTITATIVE METHODS


QUAN 6030-3. Seminar in Quantitative Methods. Seldom Offered. Application of quantitative methods to problems of business and industry, with emphasis on the function fields of marketing, financial management, and production. Prereq: QUAN 6010 and 6020 or consent of instructor. One of the prerequisite courses may be taken as a corequisite.

QUAN 6040-3. Multivariate Analysis. Seldom Offered. Topics in multivariate data analysis of particular interest to those engaged in business research. Includes techniques such as multivariate discriminate analysis, factor analysis, and multiple regression, and the use of standard multivariate statistical packages such as the spss package. Prereq: BUSN 6020.

QUAN 6800-3. Special Topics. Seldom Offered. A number of different topics in quantitative methods will be discussed in this course. Consult the current schedule of classes or contact the advisor for further information. Prerequisites will vary depending on topic and instructor requirements.

QUAN 6840-1 to 8. Independent Study.
The School of Education offers master's degrees in 7 program areas:

1. Administration, Supervision and Curriculum Development (Administration or Educational Technology Emphasis)
2. Counseling Psychology and Counselor Education
3. Early Childhood Special Education
4. Early Childhood Education
5. Educational Psychology
6. Library Media
7. Special Education

Other graduate degree offerings include the Specialist in Education (Ed.S.) and Ph.D degree, in Educational Administration and Supervision (also with Technology emphasis).

The School of Education is fully accredited by the Colorado Department of Education (CDE), the National Council for the Accreditation of Teacher Education (NCATE), the North Central Association of Colleges and Secondary Schools (NCA) and the Council for Accreditation of Counseling and Related Educational Programs (CACREP) in Agency Counseling, School Counseling and Marriage and Family Therapy.

Every faculty member in the School holds a doctorate and is a member of the graduate faculty. The faculty has a distinguished record of research, publication and teaching. Since 1980 the faculty has authored hundreds of refereed journal articles, as well as over a hundred books and chapters in books. Currently, the Educational Forum, an internationally recognized journal in education, is housed within the School and its editor is a member of the faculty.

The School prepares a large percentage of teachers certified to teach in Colorado's K-12 schools. The Teacher Education Program is a graduate level program designed to prepare elementary and secondary teachers for a variety of school settings through academic work, professional studies, classroom teaching experiences and community field experiences.

At CU-Denver, initial teacher certification is available in the following areas:
1. Elementary Education (K-6th grade)
2. Secondary Education (7th-12th grade) in the following fields:
   a. English
   b. Foreign Language (French, German and Spanish)
   c. Mathematics
   d. Science
   e. Social Studies
3. Early Childhood Special Education
   The Early Childhood Special Education Program prepares individuals for careers working with young children with disabilities, birth to five years.
4. Special Education
   The Special Education Program has several options including:
   Teacher I: Students with mild/moderate needs.
   Teacher II: Students with severe affective, cognitive or communication needs.
   Teacher III: Students with profound (multiple) needs.

5. School Psychology

AFFILIATED PROGRAMS

Urban Access Program

The CU Teacher Access Program is administered by William F. Grady, Dean. Total degree programs will be offered in the seven-county Denver metropolitan area. Contact Lorrie Spears in the Dean's office for information about the courses and applying to the Access Program.

Total degree programs are offered in counseling psychology and counselor education, curriculum and instruction, Type D certificate in administration and supervision, and educational administration with an emphasis in instructional technology. A certificate program is offered in Teacher of the Linguistically
Different. Most courses are held at community colleges in the seven-county metropolitan Denver area.

Rural Access Programs/School of Education

Beginning in 1990-1991, three rural programs were approved and are now available: the M.A. in counseling psychology and counselor education in Rifle; Glenwood Springs, and Steamboat Springs; the certificate program in Library Media offered in Rifle and Steamboat Springs; and the certification program in early childhood education/special education offered in La Junta, Cortez, Durango, Trinidad, Canon City, Montrose, Delta, Vail, and Steamboat Springs.

Center for the Study of Racism and Ethnic Violence

Director: Milton Kleg

Activities of the Center for the Study of Racism and Ethnic Violence (CSREV) include research and education related to prejudice and hate violence. The scope of the Center ranges from local to international levels. Fields of inquiry include:

- The Study of the Causes and Consequences of Ethnic and Racial Conflict
- The Study and Monitoring of Racial and Ethnic Conflict, Hate Groups, and Their Members
- The Development, Collection, and Analysis of Education Materials Designed for Prejudice Reduction Education
- Research Related to Racial and Ethnic Attitudes

Educational and training programs are provided for those interested in learning or teaching about the nature of prejudice, discrimination, and scapegoating. The Center’s CSREV Bulletin is published biannually.

Additional information about the Center, its research, educational, or service activities may be obtained by writing to:
The Center for the Study of Racism and Ethnic Violence, University of Colorado at Denver, Campus Box 106, P.O. Box 173364, Denver, CO 80217-3364 or calling (303) 556-3365.

Colorado Principals’ Center

Director: Dick Koeppe

The primary mission of the Center is to enable principals to shape their professional intellectual development. Activities include topical seminars, panel discussions, round table discussions, and ongoing special interest groups.

Topical seminars feature individual presenters (primarily principals) who provide information on promising or successful practices, demonstrations or models, and opportunities for participant interaction. Panel discussions highlight current high-relevance topics, with panel and participant interaction in formal and informal settings. Special interest groups facilitate exploration of relevant problems and issues through brainstorming, literature review, and idea sharing during a series of meetings.

The Center also focuses on conducting and disseminating research. Projects have included a study of administrator role perceptions in school reform, the effects of principal peer coaching and reflection to improve instructional leadership, and a study of the developing professional identity of first year high school principals.

Graduate students are hired by the Center as research assistants.

Storytelling Conference

Since 1978, the School has sponsored annual Storytelling Conferences which present poets, artists, and yarnspinners from throughout the U.S. Conference organizer is Norma J. Livo, Professor of Education. The two-day conference, held in Denver, attracts up to 500 participants—many register for graduate credit. Nationally known storytellers are featured, presenting tales and poems of other cultures, regions, and times. According to Dr. Livo, storytelling has surged in popularity in recent years as the public and educators recognize its power both to captivate audiences and its uses as a teaching tool. It satisfies a need for one of the oldest forms of human communication and also contains unconscious levels of meaning that are not always obvious.

Region VIII Resource Access Project

Director: Harriet Able-Boone

Under a contract funded by the U.S. Department of Health and Human Services, the Resource Access Project provides training and technical assistance to HeadStart centers throughout a six-state region. The Region VIII project, which serves 71 HeadStart organizations, is only one of ten such projects in the U.S.

Through the project, HeadStart staff will learn how to integrate handicapped children into regular HeadStart classrooms more effectively.

ADMISSION (DEGREE PROGRAMS)

Note: Students interested in teacher certification should refer to Teacher Education Programs in this section of the catalog for requirements and application procedures.

Prospective degree candidates (master’s, specialist, Ph.D.) should request application forms from the program area to which they are applying. The application packet contains application materials and information regarding admission requirements for each program area as well as testing requirements and recommendation forms. Listed below are program areas and phone numbers:

Bilingual/ESL, 556-4366
Counseling Psychology and Counselor Education, 556-8367
Curriculum and Instruction, 556-2290
Foundations, 556-4366
Early Childhood Education and Early Childhood/Special Education, 556-3535
Educational Administration and Supervision, 556-4857
Educational Psychology, 556-3535
Instructional Technology, 556-4881
Reading and Writing, 556-4366
Special Education, 556-9262

Application papers and all supporting documents (including two official transcripts from each college or university attended, four letters of recommendation, GRE or MAT scores, and the $30 application fee) must be submitted to the Office of Student Services by March 1 for summer term, May 1 for fall semester, or October 1 for spring semester.

Official transcripts must be sent directly from each college or university to the School of Education. They may not be submitted by the student.

Application materials and fee, transcripts, and recommendations must be submitted by the appropriate deadline to:

University of Colorado at Denver
School of Education
Campus Box 106
P.O. Box 173364
Denver, CO 80217-3364

Degrees and Areas of Specialization

The following programs, offered by the School of Education, cover a wide range of professional and academic interests.
M.A.

Counseling Psychology and Counselor Education, options include:

- College Student Personnel
- Community/Agency Counseling
- Counseling and Human Resource Development
- Public School Counseling
- Marriage and Family Therapy

Curriculum and Instruction, options include:

- Elementary Education
- Secondary Education
- Bilingual/ESL
- Foundations
- Reading and Writing

Early Childhood Education (regular or special education emphasis), options include:

- Infant Specialization
- Family Specialization

Administration, Supervision and Curriculum Development

Emphasis possible in Educational Technology, options include:

- Corporate Instructional Training and Development
- Instructional Computing
- Instructional Technologist
- Master Resource Teacher
- Higher Education
- School Library Media Specialist

Educational Psychology, options include:

- Child Growth and Development
- Human Learning
- Research and Evaluation Methodology
- School Psychology
- Individualized

Special Education

Teacher I: Students with Mild/Moderate Needs
Teacher II: Students with Severe Affective Needs or Severe Cognitive Needs or Severe Communication Needs
Teacher III: Students with Profound (multiple) Needs

Ed.S (Specialist in Education)

Administration, Supervision and Curriculum Development

Emphasis possible in Educational Technology

Ph.D.

Administration, Supervision and Curriculum Development

Emphasis possible in Educational Technology

Outlines of each graduate program are listed in the following pages of the School of Education section. Since many of the graduate degree plans are flexible and can be designed around individual student needs, it is highly desirable that the prospective candidate discuss tentative programs of studies with appropriate faculty members prior to submitting applications.

Degree Requirements

Two Master of Arts degree plans are available, each comprising one academic year or more of graduate work beyond the bachelor's degree.

1. M.A. – Plan I (With Thesis). The program consists of 36 semester hours or more, including 4 semester hours for the master's thesis. While the inclusion of a minor field is not required by The Graduate School, a student and advisor may agree on a minor, in which 4 to 8 semester hours can be applied toward degree requirements. The M.A. thesis is written in accordance with the specifications set by The Graduate School and under the supervision of the student's advisor.

2. M.A. – Plan II (Without Thesis). The Plan II program includes 36 or more semester hours of graduate credit, and may include 4 to 10 hours for a minor. The minor is highly recommended in some fields of study.

Comprehensive Examinations

The advisor and student will decide upon one of the following alternatives in the semester before the comprehensive examination is scheduled. Any option taken will require that at least one professor other than the advisor will sign off on the Comprehensive Examination Report that goes to The Graduate School. Identification of this "second reader" should be made at the same time the option is chosen so that the "second reader" can be a part of the planning for the examination.

1. Written Examination. The advisor arranges test questions for the student to write in a four-hour examination. This treatment varies among advisors: some advisors work out questions in advance with the student—other advisors will select final questions for the examination from among those discussed with students. In other cases, the advisor may select questions for the examination and present them to the student at the time of the examination.

2. Take-Home Examination. This option allows the advisor to construct questions with or without input from the student. The student completes the examination at home and turns in the finished product on or before the day of the scheduled comprehensive examination.

3. Oral Examination. This option requires dialogue between students and at least three of their professors over the course work taken in the master's degree program.

4. Written/Oral Combination Examination. This option combines any of the written options noted above and a shortened oral examination during which a committee may ask for clarification of or elaboration on the written examination.

5. Master's Report. This option allows the student to write a synthesizing paper of considerable length (20-30 pages). The project might elaborate on a curriculum plan to be implemented, describe an inservice project, be in the form of a grant proposal or a pilot/feasibility study for future work, or propose an action research project. While practical in nature, the project should demonstrate sufficient theoretical underpinnings to indicate mastery of knowledge assumed for a candidate for a master's degree.

6. Field Study Project. The student develops and implements a field study and prepares a project report.

Transfer Credit

Credit earned before formal admission is transfer credit. Nine master's level transfer hours may be counted toward the M.A. degree. (Transfer credit and non-degree credit may total only 9 hours.)

TEACHER EDUCATION PROGRAMS

Acting Director of Teacher Education: Nancy Shanklin
Director of Clinical Programs: Marilyn Scamman
Office: NC 4001
Campus Box 106
P.O. Box 173364
Denver, CO 80217-3364
Telephone: 556-4387

Program Overview

The Teacher Education Program at CU-Denver is a graduate certificate program designed to prepare elementary and secondary teachers for a variety of public school settings through academic work, professional studies, and school-based field experiences. Candidates must hold a baccalaureate degree, or have completed at least 90 credit hours in the CU-Denver College of Liberal Arts and Sciences, to apply for admission.
The University of Colorado at Denver is fully accredited by the North Central Association of Colleges and Secondary Schools (NCA), the National Council for Accreditation of Teacher Education (NCATE), the Colorado Department of Education (CDE) and the Council for Accreditation of Counseling and Related Educational Programs (CACREP).

Certification Availability
Teacher certification is available in the following areas at CU-Denver:
- Elementary Education (K–6th grade)
- Secondary Education (7th–12th grade) in the following teaching fields:
  - English
  - Foreign Language (French, German and Spanish)
  - Mathematics
  - Science
  - Social Studies

Application Deadlines
Application deadlines for the Teacher Education Program are May 1 for fall semester, October 1 for Spring semester and March 1 for summer term. These deadlines are strictly enforced and students must submit all required materials prior to these deadlines.

Orientation/Information Sessions
The School of Education offers weekly orientation sessions to provide information regarding requirements and procedures for applying to the Teacher Education Program. The sessions are held most Mondays at 12 noon and 4:30 p.m. (holidays excluded) and last approximately one hour. Immediately after the noon session candidates may meet with an advisor to discuss program requirements, review transcripts and discuss a tentative plan for completing certification at UCD. Candidates should call the School of Education, Student Services Office for information regarding orientation times and location (556-4387).

Advising
Applicants may schedule an advising appointment after making application to the Program. During this session students are provided with academic and professional assistance in planning a program of study leading to teacher certification. To make an appointment phone 556-4387 or schedule in person in Room 4001 of the North Classroom Bldg.

Non-degree student status is designed for teachers seeking recertification credit or individuals who wish to take an exploratory course. It provides a quick entry for those who are not seeking to enter a program of study leading to certification or a master's degree.

Coordinating a Master's Degree with Certification
Teacher Certification at CU-Denver is offered as a separate (non-degree) program as some individuals are interested in certification but are not interested in pursuing an advanced degree. However, many students wish to be certified to teach and earn a master's degree. For these students, CU-Denver offers a combined certification/master's program. Approximately half the semester hours required for certification are also applicable toward a master's degree in curriculum and instruction. Although several other master's degree programs are available, curriculum and instruction is the only master's degree directly coordinated with the certificate program.

Students seeking teacher certification, a second endorsement, or a master's degree should apply for regular admission through the School of Education.

Undergraduates
Since the School of Education is a graduate school, students are normally required to have a baccalaureate degree to apply for admission. However, through a special arrangement with the CU-Denver College of Liberal Arts and Sciences, CLAS seniors may complete up to 15 credit hours of course work in education, provided they have applied and have met all entrance requirements. No more than 15 semester hours of graduate education courses may be taken as an undergraduate. All or part of these 15 semester hours may be applied toward an undergraduate degree. However, courses applied toward the baccalaureate degree may not also be applied toward a master's degree.

While CLAS undergraduates are permitted to take 15 hours of course work in the School of Education, undergraduate students are not officially admitted to the Teacher Education Program until they submit proof of graduation.

Individuals seeking teacher certification, a second endorsement, or a master's degree should apply for regular admission through the School of Education. Because of Colorado state rules governing teacher certification, students who plan to enter the Teacher Education Program at CU-Denver may take only one semester as a non-degree student. Students beginning their second semester must have been accepted to the Teacher Education Program and must have met all state mandated admission requirements.

Course Restrictions
Most courses in the Teacher Education Program are restricted to students who have met all entrance requirements and have been accepted to the program. This applies to graduate students, undergraduates who are beginning the certification program as seniors, and to certified teachers seeking a second endorsement.

Non-Degree Students
Individuals desiring to take courses as a non-degree student apply directly to the Office of Admissions and bypass entirely the application procedures and requirements of the School of Education.
Foreign Language Certification Candidates

Students seeking teacher certification in French, German, or Spanish must pass written and oral proficiency tests administered by the CLAS Department of Modern Languages. These exams are required prior to or during a student’s first semester in the certification program unless approval is granted by the faculty of the Department of Modern Languages for a postponement.

In situations in which a postponement is granted, foreign language certification students must have successfully passed both written and oral competency tests prior to registering for the second field experience course, Microteaching (TED 5130).

Foreign language certification candidates have an advisor in both the Department of Modern Languages in the College of Liberal Arts and Sciences (an undergraduate program) and the School of Education (a graduate program). Both advisors must sign the student’s advising sheet (program plan) before he/she begins taking course work in the School of Education.

Student Teaching

Student teaching is generally the last course taken in the professional sequence. Students will need to plan for the financial resources and time required before making application to student teach (at least 12 weeks, full time).

Students applying for student teaching must have completed all course work in the professional sequence (education) with at least a B average. Methods course work and all field experience course work must be completed with at least B grades. Students also must have a positive recommendation from their cooperating teacher in microteaching in order to student teach.

No course work may be taken during the semester of student teaching without the advisor’s written permission as noted on the student’s advising sheet.

Student teaching assignments are not available in the summer except for a very limited number of second endorsement candidates. Student teaching application deadlines are:

Fall: February 15
Spring: September 15
Summer: October 1 (Elementary second endorsements only)

All prospective student teachers must meet with the Director of Clinical Education and submit a completed student

Second Endorsement Candidates

Individuals currently holding a Colorado Teaching Certificate who are seeking a second endorsement must submit a copy of their Colorado certificate along with their application for admission. Such students should seek advice as early as possible in planning their program as education requirements may be substantially modified for teachers holding Type A or B Certificates.

Second endorsement candidates must also apply to the Teacher Education Program, meet entrance requirements, and be accepted to the program before taking course work in the professional sequence.

While second endorsement candidates are exempt from taking the basic skills tests and need not present evidence of successful work with youth, they must submit three letters of recommendation. At least one of these recommendations must be from a candidate’s previous or current principal or other administrator attesting to competent and effective teaching ability.

Out-of-State Teachers

A Colorado Teaching Certificate may be issued to an out-of-state applicant provided the applicant has completed a planned, sequential course of study in teacher education (including student teaching) at an accepted institution of higher education. The applicant must have at least a 2.50 grade-point average in the endorsement area being sought and have successfully completed student teaching as verified by the prepar ing college or university.

Teachers from other states who are seeking a teaching certificate in Colorado should contact the Teacher Education and Certification Office at the Colorado Department of Education (CDE), 201 East Colfax Avenue (866-6628) for application materials and information. Department officials will evaluate a candidate’s credentials and determine whether additional course work is necessary to meet Colorado requirements for certification. Individuals may hold a valid teaching license from another state, and have several years teaching experience, and still not qualify for a Colorado teaching certificate since out-of-state teachers must meet the same standards required of in-state candidates.

Out-of-state teacher candidates who wish to take course work to meet specific deficiencies or update skills may take classes at CU-Denver as a non-degree student. Non-degree student applications are available from the Office of Admissions Processing, North Classroom Building, Room 1001 (556-2660) and should be returned to this office when completed.

Candidates interested in pursuing an advanced degree should apply to the School of Education rather than take courses as a non-degree student.

Admission Standards and Criteria

The CU-Denver Teacher Education Faculty uses multiple criteria to assess the personal characteristics, communication skills and basic academic proficiency of candidates to determine those most qualified for admission to teacher training. Every effort is made to encourage candidates from culturally diverse backgrounds.

Candidates must meet or exceed all standards listed below to be admitted. The following standards and criteria are considered by the faculty:

Academic Competence

1. Evidence of a baccalaureate degree or at least 90 semester hours in the CU-Denver College of Liberal Arts and Sciences.
2. Grade-point average for all college/university level course work; a 2.75 overall GPA is required.
3. Grade-point average in a candidate’s academic major or teaching field; a 2.75 GPA is required.
4. Scores on the California Achievement Test (scores at or above the 75th percentile on the math, language and spelling subtests are required).

Experience with Children/Youth

Evidence of prior work with children/youth (as documented in the candidate’s career goals statement and by at least one letter of reference which indicates a record of competence and effectiveness in working with young people).
References
Two additional letters of reference, submitted from faculty members or other professionals, which document competence and effective teaching in working with children and/or academic and creative achievement and/or other professional endeavors. Letters should address the applicant's potential for graduate study and success in teaching.

Career Goals Statement
A career goals statement which includes a candidate's reasons for wanting to become a teacher, together with a discussion of experiences in preparation for a teaching career.

Communication Skills
1. An interview designed to discuss a candidate's goals and aspirations, views of teaching, and plans for graduate study.
2. Above average ratings from an oral speech test administered by the CU-Denver Testing Center or evidence that the candidate has successfully completed a college level speech course with an A or B grade.

Faculty Review
Students are admitted to the Teacher Education Program by a faculty admission committee and are carefully monitored by School of Education faculty throughout their program. Students must maintain at least a 3.00 GPA and must earn at least B grades in all field experience, methods course work and student teaching.

Beyond grades and GPA requirements, the faculty members are also concerned with students' professional attitudes and conduct, communication skills, and other behaviors critical to the teaching profession.

Students are evaluated throughout the program for positive personal and professional behaviors. The above review processes are based on the assumption that there are multiple criteria for admission/retention of students in the Teacher Education Program.

Assumed as well is that all School of Education professors and cooperating teachers, who supervise field experience students, have a responsibility for the overall quality of the teachers that CU-Denver recommends for certification.

Elementary Education Teacher Certification
The faculty of the School of Education at CU-Denver believes that the most appropriate education for an elementary teacher is based upon a liberal arts tradition. The teacher in the elementary school is a generalist and must be aware of the basic structure of a wide variety of disciplines.

Students with a baccalaureate degree who seek elementary certification must have a liberal arts undergraduate major or equivalent in the humanities, social sciences, or natural/physical sciences. Approximately half the course work (18 semester hours) required for elementary certification may be applied to a master's degree in curriculum and instruction, provided the student has been accepted to the master's program.

The Graduate School will accept only 9 semester hours of course work, taken before admission to the master's program. Thus, students in the certification program should apply to the master's program during their first semester, provided they wish to pursue a master's degree.

PROFESSIONAL SEQUENCE FOR ELEMENTARY CERTIFICATION

COURSES
FNDS 5000-3. Teaching as a Profession.
A general foundations of education course for preservice candidates. Provides a broad overview of education of the historical, sociological, philosophical and legal foundations of education. Includes an examination of contemporary issues in schooling, schooling organizational patterns, and the professional rights and responsibilities of the teacher. (Graduate credit, but does not apply toward master's degrees.)

ED 5190-2. Field Experience: Exploring Education.
First field experience course for teacher certification students. The course is designed as an introduction to public schools and requires extensive observation and school-based practicum work. Supervision is provided by the classroom cooperating teacher and the course instructor. University class sessions cover lesson planning, teaching strategies, evaluation techniques and training students to become reflective practitioners.

EPSY 5000-3. Psychological Foundation of Education.
A survey of results of psychological inquiry with emphasis on applications to educational practices. Major topics are motivation, behavior, learning, development, measurement, and characteristics of teachers and students.

MATH 3040-4. Mathematics for Elementary Teachers. Topics include intuitive and logical development of geometric ideas relevant to K–6 curriculum; measurement of length, area, volume, mass, angle, temperature, and time; stress is on the metric system; further study of the rational number system, probability and statistics; applications and problem solving. Carries credit only for elementary education majors. Offered every semester.

Integrating the language arts (reading, writing, listening, speaking) with children's literature. Selection of materials and development and presentation of ways to use children's literature in teaching the language arts. Required for post-baccalaureate pre-service teacher.

ELED 5150-6. Elementary Curriculum: Teaching Mathematics, Science and Social Studies. Emphasis will be on the role of the classroom teacher in development, implementation, and evaluation of contemporary curricula. The course will demonstrate the relationship between educational theory and classroom pedagogy and is required for the post-baccalaureate pre-service teacher.

ELED 5210-3. Models of Teaching. (SECE 5210.) Emphasis on learning, refining, analyzing, and redesigning various teaching models including: inquiry, concept attainment, role playing, and advanced organizers. Students are assigned to small groups for purposes of planning and teaching lessons designed around various models under examination.

SPED 5000-3. Education of Exceptional Children. Introduction to all major categories of exceptionality. Emphasis is on historical perspectives, legal aspects, definitions of handicapping conditions, major theoretical viewpoints and service delivery models. Note: SPED 5010-3, Teaching Strategies for Students with Special Needs, maybe substituted by students who already have basic knowledge of material covered in SPED 5000. (May apply for master's credit.)

ELED 5170-3. Community and Interpersonal Relations. (SECE 5170.) Provides an opportunity for students to develop communication and interpersonal skills that will enable them to facilitate positive student self-concept and interaction among professional educators, the community and social groups. Exposes the student to urban environment.

IT 5180-3. Instructional Technology for Teachers. Basic procedures for selecting,
producing, evaluating, and utilizing instructional media/technology, including microcomputers and television, in the instructional process. Required only for teacher certification program.

**RDG 5000-3. Effective Reading Instruction.** Critically examines current reading instruction methodologies and the educational theories which support their use. Assists teachers in the development of an effective reading program from a whole language perspective. Course includes the use and development of literature units, author studies, reader's workshop, thematic units and basal readers as a means of integrating reading and elementary content areas.

**ELED 5160-3. Expressive Arts.** This course familiarizes participants with drama, music, dance and movement (pe, dance and health), and visual arts. Provided is a rationale for the arts in the elementary curriculum and ways in which arts can be integrated into classroom activities.

**TE 5911-3. Microteaching.** Second field experience course for teacher certification students. The course involves extensive school-based practicum work as well as university class sessions covering motivation, classroom management strategies, reflective thinking skills and professional issues. Provides extensive clinical supervision through videotaped presentations, cooperating teacher feedback and classroom visitations by the university teacher.

**TE 5915-8. Student Teaching: Elementary and Secondary Schools.** Supervised 12 week practicum experience in area public schools. The course provides students with increasing responsibility for directing the teaching/learning activities of elementary or secondary pupils. Three seminars are required which emphasize further development of students' reflective skills, e.g., their ability to analyze and internalize the results of their own teaching. **Note:** Second endorsement candidates with recent teaching experience at the appropriate level may substitute ELED 5190-4, Advanced Practicum.

**Secondary Education Teacher Certification**

Students interested in obtaining teacher certification at the secondary level must have:

1. A baccalaureate degree from an accredited institution of higher education.
2. A major or equivalent in the discipline of endorsement.

3. Additional courses as prescribed by the University to meet state certification standards, NCATE standards, and North Central accreditation standards. Approximately half the course work required for secondary teacher certification may be applied to a master's degree in curriculum and instruction, provided the student has been accepted to the master's degree program.

The Graduate School will accept only 9 semester hours of course work, taken before admission. Therefore, students in the certification program who are interested in pursuing a master's degree should apply to the master's program during their first semester.

**PROFESSIONAL SEQUENCE FOR SECONDARY CERTIFICATION**

**COURSES**

**FNDS 5000-3. Teaching as a Profession.** A general foundations of education course for preservice candidates. Provides a broad overview of education of the historical, sociological, philosophical and legal foundations of education. Includes an examination of contemporary issues in schooling, schooling organizational patterns, and the professional rights and responsibilities of the teacher. (Graduate credit, but does not apply toward master's degrees.)

**TE 5910-2. Field Experience: Exploring Education.** First field experience course for teacher certification students. The course is designed as an introduction to public schools and requires extensive observation and school-based practicum work. Supervision is provided by the classroom cooperating teacher and the course instructor. University class sessions cover lesson planning, teaching strategies, evaluation techniques and training students to become reflective practitioners.

**EPSY 5000-3. Psychological Foundation of Education.** A survey of results of psychological inquiry with emphasis on applications to educational practices. Major topics are motivation, behavior, learning, development, measurement, and characteristics of teachers and students.

**SPED 5000-3. Education of Exceptional Children.** Introduction to all major categories of exceptionality. Emphasis is on historical perspectives, legal aspects, definitions of handicapping conditions, major theoretical viewpoints and service delivery models.

**SECE 5170-3. Community and Interpersonal Relations.** (ELED 5170.) Provides an opportunity for pre-service teachers to develop communication and interpersonal skills that will enable them to facilitate positive student self-concept and interaction among professional educators, the community, and social groups.

Exposes students to urban environment. Topics also include child abuse and its recognition.

**SECE 5210-3. Models of Teaching.** (ELED 5210.) Emphasis on learning, refining, analyzing and redesigning various teaching models including: inquiry, concept attainment, role playing and advance organizers. Students are assigned to small groups for purposes of planning and teaching lessons designed around various models under examination.

**RDG 5020-3. Reading and Writing Strategies in Secondary Content Areas.** Explores the value and use of reading and writing in learning in content areas. Provides specific strategies for helping content area teachers increase the learning of their students through reading and writing.

**IT 5180-3. Instructional Technology for Teachers.** Basic procedures for selecting, producing, evaluating, and utilizing instructional media/technology, including microcomputers and television, in the instructional process. Required only for teacher certification program.

**Note:** Secondary certification candidates must take one of the following methods courses, pertaining to their teaching field.

**SECE 5460-3. Secondary Social Studies Methods and Curriculum Design.** Recent development in theory and materials in the social studies are examined and present practices analyzed for their contribution to general goals of social studies education. Appropriate for secondary teachers and elementary teachers with a specialization in social studies.

**SECE 5250-3. Theory and Practice in Teaching English.** Curriculum, materials, methods, evaluation, and related aspects of instruction. This course is designed to integrate content and methodology.

**SECE 5350-3. Issues and Problems in Science Education.** Recent developments in theory, curriculum, methods, and materials in secondary science, examined for their contribution to the objectives of science education.

**TE 5300-3. Introductory Curriculum and Methods in Secondary Mathematics.** Survey of secondary mathematics curriculum and methods for pre-service teachers. Topics include planning lessons, motivation, grading, constructing tests, problem solving, teaching aids, expository
and discovery lessons, teaching concepts and skills.

French/German/Spanish 4690-3. Methods of Teaching Modern Languages.

Methodology of teaching French, German, and Spanish. Requirement for language majors in the Teacher Certification Program, School of Education, CU-Denver. Normally taken immediately prior to student teaching. Methodology of teaching French, German, and Spanish in an urban setting. Normally students should have completed all other requirements for the major.


Introductory methods course for preservice teachers. Covers content of 7–12 curriculum, principles of learning, planning lessons, methods of teaching, testing, resources, textbooks, and other topics.

TED 5911-3. Microteaching.

Second field experience course for teacher certification students. The course involves extensive school-based practicum work as well as university class sessions covering motivation, classroom management strategies, reflective thinking skills and professional issues. Provides extensive clinical supervision through videotaped presentations, cooperating teacher feedback and classroom visitations by the university teacher.


Supervised 12 week practicum experience in area public schools. The course provides students with increasing responsibility for directing the teaching/learning activities of elementary or secondary pupils. Three seminars are required which emphasize further development of students’ reflective skills, e.g., their ability to analyze and internalize the results of their own teaching.

PROGRAMS OF STUDY

COUNSELING PSYCHOLOGY AND COUNSELOR EDUCATION

Program Area Coordinator: Robert L. Smith
Office: NC 4028
Telephone: 556-8367
Faculty: Professors: Robert L. Smith, William A. Sease
Associate Professors: Andrew A. Helwig, Patricia Stevens-Smith, Walter L. Strandburg

The Master of Arts degree through the Counseling Psychology and Counselor Education division prepares professionals for community/mental health agencies, private practice, public schools, universities, and business and industry. Students should obtain faculty advising relevant to requirements.

All programs consist of 48 semester hours (with the exception of the Marriage and Family Therapy program which is 60 hours). Core requirements are parts of the major field sequence in addition to electives. Within the 48 hour program is a practicum (100 clock hours), and an internship (600 clock hours). The master’s degree is a two-year program.

The community/agency, school counseling, and marriage and family therapy programs are accredited by CACREP—the Council for the Accreditation of Counseling and Related Educational Programs.

Program Areas

Students accepted into the master’s program follow one of five program tracks offered in the Counseling Psychology and Counselor Education division. In addition to the course work, foundation level studies in other School of Education divisions are required of graduate degree students in Program Area One, Two, Three, and Five. Program Area Four: Counseling and Human Resource Development, is an interdisciplinary track and requires course work outside of the division. The Marriage and Family Therapy program is 60 hours and follows licensure requirements as does the Community/Agency track.

CORE CURRICULUM REQUIREMENTS FOR PROGRAM AREAS ONE, TWO, THREE, AND FIVE (12 HOURS)

REM 5200-3. Introduction to Research Methods
REM 5300-3. Introduction to Measurement
LC 5040-3. Multicultural Education
CPCE 5831-3. Strategies in Multicultural Counseling
EPSY 6200-3. Human Development Over the Lifespan

PROGRAM AREA ONE: COMMUNITY/AGENCY COUNSELING (M.A.)*

CPCE 5010-3. Foundations of Counseling
CPCE 5020-3. Personal Appraisal
CPCE 5100-3. Theory and Techniques of Counseling
CPCE 5110-3. Group Dynamics
CPCE 5150-3. Marital and Family Studies
CPCE 5280-3. Substance Abuse Counseling
CPCE 5330-3. Professional Seminar in Counseling
CPCE 5400-3. Psychology of Careers
CPCE 5820-3. Strategies in Agency Counseling
CPCE 5910-3. Practicum
CPCE 5930-6. Internship

ELECTIVES

CPCE 5930-6. Internship

PROGRAM AREA TWO: PUBLIC SCHOOL COUNSELING CERTIFICATE (M.A.)*

CPCE 5010-3. Foundations of Counseling
CPCE 5020-3. Personal Appraisal
CPCE 5100-3. Theory and Techniques of Counseling
CPCE 5110-3. Group Counseling
CPCE 5280-3. Substance Abuse Counseling
CPCE 5330-3. Professional Seminar in Counseling
CPCE 5400-3. Psychology of Careers
CPCE 5420-3. Organizational Development
CPCE 5800-3. Strategies in Public School Counseling
CPCE 5910-3. Practicum
CPCE 5930-6. Internship

PROGRAM AREA THREE: MARRIAGE AND FAMILY THERAPY (M.A.)

CPCE 5010-3. Foundations of Counseling
CPCE 5020-3. Personal Appraisal
CPCE 5100-3. Theory and Techniques of Counseling
CPCE 5110-3. Group Dynamics
CPCE 5400-3. Psychology of Careers
CPCE 5280-3. Substance Abuse Counseling
CPCE 5330-3. Professional Seminar in Counseling
CPCE 5150-3. Marital and Family Studies
CPCE 5850-3. Workshop—Human Sexuality

*A teaching certificate (valid in Colorado) and two years of teaching experience are required for the Public School Counseling Certificate. Type E certification is available for professionals able to substitute related experiences for the teaching requirement.
CPCE 5160-3. Theory and Techniques in Marital and Family Therapy
CPCE 6160-3. Advanced Assessment, Theory, and Treatment in Family Systems
CPCE 5910-3. Practicum
Electives
CPCE 5140-3. Systems Theory in Family Studies
CPCE 5833-3. Strategic Family Therapy
CPCE 6140-3. Adult-Child Relationships in Family Studies
CPCE 7680-3. Addictions: Advanced Treatment and Systemic Methods in Working with Families

PROGRAM AREA FOUR: COUNSELING AND HUMAN RESOURCE DEVELOPMENT (M.A.)

CPCE 5010-3. Foundations of Counseling
CPCE 5020-3. Personal Appraisal
CPCE 5100-3. Theory and Techniques of Counseling
CPCE 5110-3. Group Dynamics
CPCE 5150-3. Marital and Family Studies
CPCE 5240-3. Counseling and Human Resource Development
CPCE 5280-3. Substance Abuse Counseling
CPCE 5330-3. Professional Seminar in Counseling
CPCE 5400-3. Psychology of Careers
CPCE 5510-3. Practicum
CPCE 5590-6. Internship
CPCE 6240-3. Consultation Strategies

Outside course work (12 hours minimum) IS REQUIRED in areas such as Instructional Technology and Education Administration, with a minimum of two courses in business.

PROGRAM AREA FIVE: COLLEGE STUDENT PERSONNEL (M.A.)

CPCE 5010-3. Foundations of Counseling
CPCE 5020-3. Personal Appraisal
CPCE 5100-3. Theory and Techniques of Counseling
CPCE 5110-3. Group Dynamics
CPCE 5120-3. The Student in Higher Education
CPCE 5330-3. Professional Seminar in Counseling
CPCE 5400-3. Psychology of Careers
CPCE 5910-3. Practicum

CPCE 5922-3. Readings in Counseling and Personnel Services Development
CPCE 5930-6. Electives

Access Program in Counseling Psychology and Counselor Education

The Counseling Psychology and Counselor Education Program has an access program for students who wish to complete course work in an off-campus setting. Courses are held at selected colleges and other sites in the Denver metropolitan area.

The quality of instruction and individual course requirements for these courses are identical to those on campus. Students should contact their advisor for further information.

Courses

Note: During the regular academic year the following courses are open to graduate degree students only and to those admitted for the purpose of pursuing professional counselor certification. Special service sections may be offered from time to time and are indicated as open. Non-degree students may be admitted with permission. See the current Schedule of Classes.


Overview of the field. History, philosophy, and introduction to theory. Legal and ethical considerations, special problems, and professional outlook. Role and function of counselors in agency and school settings. To be taken concurrently with CPCE 5020.

CPCE 5020-3. Personal Appraisal.

Personal appraisal taken concurrently with CPCE 5010, overview of the field. Emphasizes small group laboratory method and experiential learning designed to foster self exploration and interpersonal skill development. Pre: CPCE 5010.


A didactic and practical course in counseling and human resource development skills within the business setting. Employee assistance programs are emphasized. Basic HRD terminology, training techniques, and counseling/training needs are introduced. Pre: CPCE 5150 or 5140.


A didactic and practical course in counseling and human resource development skills within the business setting. Employee assistance programs are emphasized. Basic HRD terminology, training techniques, and counseling/training needs are introduced. Pre: CPCE 5150 or 5140.


An in-depth examination of special problems and topics in the field. Emphasis is on ethics in working with individuals and family systems, legal issues, licensure, professional associations, and individual projects. Pre: CPCE 5010 and 5020.

CPCE 5400-3. Career Development.

Development of competencies in career development counseling. Theories of work systems, information systems, and decision-making systems are covered. Interacting work/family systems and other subsystems are emphasized.

CPCE 5420-3. Organizational Development.

Organizational development and theory. The development and implementation of counseling and guidance programs in public school settings, program
Development, implementation, consultation, evaluation. Individual projects required for course completion. Prereq: CPCE 5010, 5020, or consent of instructor.

CPCE 5800-3. Strategies in Public School Counseling. Role and function of the public school counselor. Utilization of consultation skills and group process in relation to guidance objectives. Strategies used with "at risk", suicide, dropout, culturally different, and gifted students are emphasized. Prereq: CPCE 5010, 5020, or consent of instructor.


CPCE 5824-3. Counseling Strategies. Individually directed investigation of trends and contemporary problems and issues in the field. Oriented to the field practitioner and special needs of differential work settings. (Open.)

CPCE 5830-1 to 4. Special Topics. Specific topics vary from semester to semester. Intervention strategies with children; issues in abuse, violence, incest, legal issues, adult counseling, grief, death, and dying.

CPCE 5840-1 to 4. Independent Study. Individually directed research activity on special topics not covered by course offerings. Degree students only; with advance approval by major professor and department.

CPCE 5910-3. Practicum in Counseling Psychology and Counselor Education. Supervised counseling practice in the counseling lab and appropriate settings (100 clock hours). Emphasis on individual and group counseling techniques and therapeutic intervention strategies. Prereq: CPCE 5010, 5020, 5100, and 5110. (5160 and 5150 in addition for marriage and family therapy track.)

CPCE 5922-3. Readings in Counseling and Personnel Services Development. Focus on special problems in development and delivery of personnel services. Directed readings and small group activities.

CPCE 5930-3 to 6. Internship in Counseling Psychology and Counselor Education. Supervised internship of 600 clock hours. Intern performs activities of a regularly employed professional in designated setting. Prereq: required CPCE course work including practicum.

CPCE 6120-3. Computer Applications in Counseling and Assessment. Introduction to the various uses of computer technology in guidance, counseling, and assessment activities. Underlying theoretical concepts and a variety of software programs will be reviewed. Prereq: graduate status.


CPCE 6240-3. Consultation Strategies. This course focuses on the development of consultation skills and implementation of strategies. The student is exposed to major theories of the consultation process. In addition the course provides students with the opportunity to practice consultation and implementation strategies within a system: an agency, business setting, or educational setting. Prereq: CPCE 5010 and 5020, or consent of instructor.


CPCE 6910-3 to 6. Advanced Practicum in Counseling.


CPCE 7280-3. Intervention and Treatment in Substance Abuse. This course examines in-depth chemical dependency, and the diagnosis and treatment of co-dependents. Treatment modalities are emphasized including follow-up and research. Prereq: CPCE 5010, 5020, and 5280, or consent of instructor.


CURRICULUM AND INSTRUCTION

Program Area Coordinator: Maurice Holt
Office: NC 4022 B, Fourth Floor
Telephone: 556-2290
Faculty: Professors: Maurice Holt, Milton Kleg, Norma J. Livo, Glenn E. McGlathery, Marie Wirsing

Associate Professors: Mark A. Clarke, William A. Jurasek, Lynn Rhodes, Nancy Shanklin

Assistant Professors: Nancy Commis, Sherry L. Field, Rene Galindo, Sally Nathenson-Melja, Sheila Shannon, Lyn Taylor

The Master of Arts degree in Curriculum and Instruction offers a choice of five areas of emphasis in which students may focus their studies:

- Elementary, K–6 (option of generalist or specialist);
- Secondary, 7–12 (option of five specialty areas);
- Bilingual Education/English as a Second Language (elementary or secondary emphasis);
- Reading and Writing (K–6, 7–12, K–12); and
- Foundations of Education (various options).

Each of these option areas is described in detail below. In general, a minimum of 36 semester hours of course work is needed in order to meet the requirements for graduation, which must include the 9 hours of core requirement for all C and I degree options. The program for students who are combining certification with a master's degree in Curriculum and Instruction may differ in some respects (details from School of Education Student Services, 556-2717).

Curriculum and Instruction Common Core

For all of the C and I degree emphases, a common core of 9 semester hours must be completed:

(a) 3 hours from any one of the following:

- REM 5000-3 Introduction to Research Methods (recommended for Reading, K–6, 7–12, K–12; also for Bilingual Education/English as a Second Language);
- Orientation to Research, Evaluation and Measurement in Education (recommended for Bilingual Education/English as a Second Language);

(b) REM 5200-3 Introduction to Evaluation of Programs and Persons.
(b) 6 hours, by choosing one course from each of two of the following three groups:

Group I: Advanced Educational Psychology (not EPSY 5000), including:

- EPSY 5020-3 Advanced Psychological Foundations of Education;
- EPSY 5100-3 Advanced Child Growth and Development;
- EPSY 5140-3 Advanced Adolescent Growth and Development.

Group II: Multicultural Education, including:

- LC 5040-3 Multicultural Education;
- LC 5150-3 Culture of the Classroom;
- LC 5430-3 Gender as Culture.

Group III: Advanced Foundations of Education (not FNDS 5000). Possible courses include:

- FNDS 5050-3 Critical Issues in American Education
- FNDS 5410-3 History and Philosophy of Early Education
- FNDS 5500-3 Contemporary Philosophies of Education

### Bilingual Education/English as a Second Language

**Coordinator:** Mark A. Clarke  
**Office:** NC, Fourth Floor  
**Telephone:** 556-4366  
**Faculty: Associate Professor:** Mark A. Clarke  
**Assistant Professor:** Nancy L. Commins, Rene Galindo, Sheila M. Shannon

The area offers a 36-unit program leading to an M.A. in curriculum and instruction, in elementary or secondary education, with an emphasis in bilingual education or English as a second language (ESL). The program provides a theoretical and practical foundation for those interested in teaching in bilingual education or ESL programs in the U.S. or abroad, with course work in language teaching methodology, language acquisition, applied linguistics, cross-cultural education, curriculum development, and other areas.

Each student develops an approved program, in consultation with an advisor, consisting of 36 hours of course work, a field experience, and a final project. Students may select one elective.

### CORE COURSES

In addition to the 9 hours of C and I common core (see above), students need to take a minimum of 21 hours in the three areas of Linguistics, Sociopolitical Foundations, and Classroom Applications (additional hours are selected at the student's discretion, with advisor approval):

(a) Linguistics (6 hours minimum) from:

- LC 5070-3 Linguistic Analysis of English;
- LC 5110-3 Second Language Acquisition;
- LC 5810-3 Workshop in Language Acquisition and Development;
- LC 5800-3 Sociolinguistics: Language Variation and Its Implication for Teachers;

(b) Sociopolitical Foundations (6 hours minimum) from:

- LC 5030-3 Bilingual Bicultural Education;
- LC 5080-3 Community and Interpersonal Relations;
- LC 5410-3 Seminar: Literacies;
- LC 5060-3 Seminar: Bilingual Multicultural Education;
- LC 5250-3 Seminar: Teaching English as a Second Language.

(c) Classroom Applications (9 hours minimum) from:

- LC 5010-3 Materials and Curriculum Development;
- LC 5050-3 Linguistic and Cultural Issues in Testing and Assessment;
- LC 5100-3 Theories and Methods of Second Language Teaching;
- LC 5820-3 Techniques in Teaching English as a Second Language;
- LC 5750-3 Teaching Reading and Writing in Second Languages.

**Field Experience** (LC 5913: 3 hours of credit, 135 hours of field work).

The M.A. program has been developed as an advanced course of study for practicing teachers or individuals with some teaching experience, whether in BE/ESL or in other areas. All candidates are required to complete a field experience which is designed to reflect their individual needs, talents and areas of interest. A plan is developed with input from the student's advisor. All experience are supervised by Dr. Nancy L. Commins, Coordinator of Field Experiences. Students must register for course LC 5913, Field Experience, which is offered each spring semester. In this course students have the opportunity to discuss their experiences with others and provide mutual feedback and encouragement.

### FINAL PROJECT

The final project is designed to be the culminating experience of the M.A. program, one which permits students to integrate their course work and other experiences into a focused examination of important professional issues. Two options are available:

- **Plan I:** 36 hours plus thesis. The thesis option requires 4 hours of thesis credit in which the candidate finishes the thesis. Students interested in taking this option should begin to identify potential topics and research questions about midway in their program.

- **Plan II:** 36 hours plus comprehensive examination. This plan provides two options:
  1. A Teaching Philosophy and a sit-down examination. The Teaching Philosophy is a comprehensive paper that sets out the student’s philosophy of teaching and learning and includes detailed examples of how it would be put into practice. The Teaching Philosophy is developed throughout the student’s progress in the program and draws from all the course work that the student completes. Candidates submit the Teaching Philosophy when they come in to take the sit-down portion of the exam which takes place during the regularly scheduled comprehensive examination time for the School of Education. The sit-down consists of three problems that are posed against the Teaching Philosophy.
  2. Master's paper: a scholarly paper of sufficient quality to be submitted to a professional journal. Choice of this option should be made with the advisor’s approval and midway through the program. This option includes an oral defense of the paper.

### COLORADO ENDORSEMENT FOR TEACHERS OF THE LINGUISTICALLY DIFFERENT

The language and culture C and I area offers course work and supervised field experiences which satisfy standards established by the Colorado Department of Education for the endorsement to teach limited English proficient children. This program has been designed for individuals who have a strong academic background, possess a valid Colorado teaching certificate, and are committed to quality education for culturally and
linguistically different students. A minimum of 21 semester hours of course work is required, including appropriate field experiences.

Individuals applying for the bilingual education emphasis must be proficient in English and in a language other than English.

Following are the Colorado standards for the Linguistically Different Endorsement, with appropriate course work listed under each standard. These classes are cited as examples; each individual works with an advisor to develop an approved program.

COURSES

L C 5010-3. Integrating Curriculum and Assessment for Linguistically Different Learners. This course reflects current thinking in the field which ties curriculum planning more directly to ongoing assessment processes. In addition it reflects trends toward incorporating the interests, needs and cultural backgrounds of the students in materials development. The focus continues to be on planning for second language speakers of English in both bilingual and English as a second language classrooms.

L C 5020-3. Issues in Language and Culture. Provides an overview of the issues in language and culture which pertain to the education of language minority students. Topics include the nature of language and culture; historical perspectives on immigration, acculturation, and assimilation; the relationship between the school and the community; the link between bilingual and ESL education; and the assessment of language minority students.

L C 5040-3. Multicultural Education. This course is a broad view of issues about cultural diversity and schooling. The interaction of various groups is the focus, particularly looking at language, race, social class, gender, and abilities.

L C 5050-3. Linguistic and Cultural Issues in Testing and Assessment. Provides a general orientation to testing and assessment of students. The course will analyze important linguistic and cultural considerations regarding assessment instruments and procedures. Topics to be studied include the history of testing, types of tests, administration of tests, and interpretation of results, current testing trends and implications for the classroom.

L C 5060-3. Seminar in Bilingual-Multicultural Education. Provides advanced students with the opportunity to do comprehensive evaluation of current research, issues, and trends relevant to bilingual-multicultural education.

Students examine issues of importance to them from the perspective of change agents.

L C 5070-3. Linguistic Analysis of English: Implications for Teaching. Provides students with a basic understanding of the structure of English and gives them an opportunity to use that understanding to diagnose language problems. Topics to be covered include the structure of English (principally morphology and syntax) and the use of contrastive and error analysis in the classroom. Emphasis is placed on student's use of linguistic skills to solve teaching problems.

L C 5080-3. Community and Interpersonal Relations. Focuses on communication, interpersonal, and group process skills which facilitate positive student self-concept, parent-teacher cooperation, interaction among professional educators, the community, and social groups in a bilingual-setting. Field experience requires participation in linguistically different communities.

L C 5090-3. Introduction to Linguistics and Language Learning. Provides students with a basic understanding of language and introduces linguistics as an effective tool for analyzing and solving the language problems of learners, including second-language/dialect speakers. Topics to be covered include nature of language, the structure of English, language variation, language acquisition, language in society, and conversational interaction.


L C 5110-3. Second Language Acquisition. Provides students with a broad view of the field of second language acquisition. Linguistic, sociological, psychological, and anthropological contributions to the theory and practice of language learning are examined. Students are required to conduct research with a second language learner.

L C 5120-3. Culture of the Classroom. This course views cultural diversity in education with a tight focus on the classroom. Students get a microscopic view of the way in which culture is manifested in classrooms and how differences such as race, language, gender, and ability are organized.

L C 5250-3. Seminar in Teaching English as a Second Language. An issues course for experienced teachers or neophytes who have the prerequisite number of preparatory courses, this seminar is intended as a forum for the discussion and analysis of the important research and pedagogical trends in the field. Students will analyze topics of interest to them from the perspective of change agents.

L C 5410-3. Literacy. Students examine the nature of literacy and the acquisition of literacy-related skills, especially as this is manifest in the context of the classroom. "School appropriate" language skills. The topic is examined from a descriptive perspective (i.e., merely attempting to understand literacy as a phenomenon of language and language use) and from a prescriptive perspective (i.e., trying to figure out what importance this has for teachers).

L C 5430-3. Gender as Culture. Examines ways some implicit conceptual and value systems regarding gender are manifest in schools, homes, and work places. Provides students with knowledge and insight from interdisciplinary scholarship of gender in society.

L C 5800-3. Sociolinguistics: Language Variation and Its Implications for Teachers. Focuses on language change and language variation in a social context with particular emphasis on the implications of sociolinguistic language policies for the classroom. Emphasis is placed on understanding how differences in sound systems, language structure, and discourse practice impact classroom practice.

L C 5810-3. Workshop in Language Acquisition and Development. Provides students with an opportunity to examine current research on language acquisition and development and to apply their knowledge to their own teaching situation. The course focuses on language development and use in educational settings and includes a focus on second-language learners, nonstandard speakers, and bilingual children. Students collect and analyze language samples, evaluate teaching materials, and examine teaching techniques in light of the materials covered in the course.

L C 5820-1 to 3. Techniques in Teaching English as a Second Language. Develops skills in using a variety of classroom techniques to teach English as a second language. The course is a practical, "cookbook" presentation of ESL methods and techniques. Examples of classroom practices will be taken from the full educational spectrum from public schools to preuniversity intensive courses on adult education.
L C 5830-1 to 4. Workshop in Multicultural Education. Provides students with the experiences in training in multicultural methodology. How to utilize community members, para-professionals, and peers to facilitate learning in a multicultural environment.

L C 5840-1 to 4. Independent Study. Provides an opportunity for students who have a major in elementary education or secondary education to do an in-depth study of topics not covered in the regular curriculum offerings.

L C 5913-3. Field Experience in Bilingual and English as a Second Language Education. Focus is on the development of appropriate expectations for the communication skills students use as they interact in second language communities and cross cultural settings. Provides for students to discuss experiences and identify problems in communication which may arise in the field.

L C 5920-2 to 4. Readings in Multicultural Education. Provides students with an opportunity to examine the current literature as it relates to trends in contemporary issues in the area of multicultural education.


L C 6840-1 to 4. Independent Study

Elementary Education

Coordinator: Maurice Holt
Office: NC, Fourth Floor
Telephone: 556-2290
Faculty: Professor: Maurice Holt,
Milton Kleg, Norma J. Livio, Glenn E.
McGathery
Associate professor: William A. Jurasek
Associate professor: Lyn Taylor

Two emphases—generalist and specialist—are available for students selecting the curriculum and instruction M.A. degree with specialization in elementary education. A total of 36 semester hours is required for graduation in each case.

CORE COURSES

In addition to the C and I common core of 9 semester hours (see above), the following further core requirements must be met:

Elementary Education Core: (required for both generalist and specialist emphases):

(a) One of the following two 3-hour courses should be selected:

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<tr>
<th>COURSE</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>ELED 5210-3</td>
<td>Models of Teaching</td>
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<tr>
<td>ELED 6110-3</td>
<td>Curriculum Development and Implementation. (This course is best taken toward the end of the M.A. program.)</td>
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</tbody>
</table>

(b) Although not obligatory, it is recommended that students take one course in reading/writing. Three suitable courses from which a choice may be made are:

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<thead>
<tr>
<th>COURSE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDG 5000-3</td>
<td>Effective Reading and Writing Instruction; Early Childhood</td>
</tr>
<tr>
<td>RDG 5030-3</td>
<td>Reading and Writing; Writing Process, Development And Teaching</td>
</tr>
<tr>
<td>REG 5200-3</td>
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Elementary Generalist Core (15 semester hours):

Students are required to take five 3-hour advanced C and I courses, one chosen from each of the following five areas: mathematics, science, social studies, language arts, children's literature. (For available courses, see following descriptions and current schedule.)

Thus the total required core is 27 semester hours (9 hours, C and I core; 3 hours, Elementary Education core; 15 hours, Elementary Generalist Core) to which 3 hours reading/writing is desirable added. Two additional courses, to complete the total of 36 hours, may be selected on an elective basis from the programs of the School of Education and the College of Liberal Arts and Sciences, in consultation with the student's advisor. Such courses must be of graduate rank (taught by a member of the graduate faculty). All courses offered toward a master's degree must be taken within five years of the student's graduation date.

Elementary Specialist Core (18 semester hours):

(a) Four or more advanced SOE or CLAS courses in the chosen specialist area. These should be selected in consultation with the student's advisor;

(b) Two or more advanced SOE courses outside the specialist area, chosen from at least two of the five areas: mathematics, science, social studies, language arts, and children's/adolescent literature.

The total core requirement is therefore 30 semester hours. Additional graduate-level courses may be selected, in conjunction with the student's advisor, from programs of the school of Education or the College of Liberal Arts and Sciences, to make up the required M.A. degree total of 36 semester hours. All courses offered toward a master's degree must be taken within five years of the student's graduation date.

ACCESS PROGRAM IN CURRICULUM AND INSTRUCTION WITH AN EMphasis IN ELEMENTARY EDUCATION

The elementary education program has an access program available for students who wish to complete the master's degree off campus. Courses are held at community colleges and other sites in the Denver metropolitan area.

Requirements and quality of instruction for this program are identical to those for the on-campus program. Students should contact their advisor for further information.

COURSES

ELED 4800-1 to 4. Curriculum Workshop. ELED 5050-3. Mastery Learning. (SECE 5050.) Stresses the theory and research that support the concept of mastery learning and assists the professional educator in developing the skills necessary for implementation of the theory into classroom practice.

ELED 5060-3. Improvement of Instruction. (SECE 5060.) Designed to assist the educator in the systematic improvement of instruction. Emphasis will be on the emergent knowledge related to successful classroom practices, techniques of assessment, analysis, and action related to the improvement of professional skills.

ELED 5080-3. Alternative Teaching Strategies: Varied Goal Structures. (SECE 5080.) Designed to explore the research as it relates to competitive, cooperative, and individualistic goal structures and to assist the teacher in selecting and implementing the appropriate structure in the classroom.

ELED 5100-3. Curriculum/Program Development and Evaluation. Fundamentals of curriculum and program development, including theoretical foundations of U.S. curriculum, practical criteria to guide decision-making, specific models and processes for curriculum/program development and appraisal, emerging issues, problems and trends.

ELED 5110-3. Supervision of Student Teachers. (SECE 5110.) Designed to develop competency in the supervision of student teachers, including building a theoretical framework and development skills in practical application.

ELED 5140-3. Elementary Curriculum: Integrating Language Arts with Literature. Integrating the language arts
(reading, writing, listening, speaking) with children's literature. Selection of materials and development and presentation of ways to use children's literature in teaching the language arts. Required for post-baccalaureate pre-service teacher.

ELED 5150-6. Elementary Curriculum: Teaching Mathematics, Science and Social Studies. Emphasis will be on the role of the classroom teacher in development, implementation, and evaluation of contemporary curricula. The course will demonstrate the relationship between educational theory and classroom pedagogy and is required for the post-baccalaureate pre-service teacher.

ELED 5160-3. Expressive Arts. This course familiarizes participants with drama, music, dance and movement (PE, dance and health), and visual arts. Provided is a rationale for the arts in the elementary curriculum and ways in which arts can be integrated into classroom activities.

ELED 5170-3. Community and Interpersonal Relations. (SECE 5170.) Provides an opportunity for students to develop communication and interpersonal skills that will enable them to facilitate positive student self-concept and interaction among professional educators, the community and social groups. Exposes the student to interactions in a community setting.

ELED 5200-3. Classroom Management. (SECE 5200.) Instructional management, physical management, and behavior management are studied as interactive components in the establishment and maintenance of an effective learning environment.

ELED 5210-3. Models of Teaching. (SECE 5210.) Emphasis on learning, refining, analyzing, and redesigning various teaching models including: inquiry, concept attainment, role playing, and advance organizers. Students are assigned to small groups for purposes of planning and teaching lessons designed around various models under examination.


ELED 5320-3. Advanced Language Arts in the Elementary School. Current thought, as determined by research and practice in the various areas of the language arts; listening, speaking, reading, and writing. Issues, trends and innovative practices are examined.

ELED 5330-3. Current Literature for Children. Current books, trends, and media material in children's literature. This course is for people who have not had a course in this area within the past five years. Prereq: ELED 5310 or survey course in children's literature.

ELED 5350-3. Science in Elementary School. Emphasis on experimental programs and implementation of the newer programs. Supervision and curriculum development considered.

ELED 5400-3. Contemporary Mathematics for Elementary Schools. Survey of contemporary content and methodology with emphasis on interrelations between topics and techniques of providing active learning.

ELED 5410-3. Teaching Numbers and Arithmetic. Teaching methodologies related to arithmetic and its applications. Covers mathematical attributes, problem solving, math manipulatives, numeration, number concepts, number theory, algorithms, fractions and decimals, calculators, and integration of arithmetic with other curriculum areas.

ELED 5430-3. Topics in Mathematics Education. An in-depth study of topics such as mathematics and learning, geometry, testing, arithmetic, mathematics labs, calculators, and computers. May be repeated as topics vary.

ELED 5440-3. Problem Solving and Geometry in the Elementary School. Covers problem solving, spatial visualization, informal geometry, and turtle geometry with emphasis on incorporating these topics into the elementary curriculum.


ELED 5470-3. Introduction to Middle School. (SECE 5470.) Covers history and philosophy of the middle school, organization plans, team teaching, integrating content areas, characteristics of the early adolescent, and classroom management.

ELED 5480-3. Museums in Education. (SECE 5480.) For elementary and secondary teachers, this course acquaints teachers with the educational resources extant in public institutions such as museums, zoos, historical societies, etc.

ELED 5490-3. Middle School Curriculum. This course will explore the unique curriculum requirements of transgressive youth. Topics to be addressed include team teaching, interdisciplinary curricula, flexible scheduling, basic skills development, guidance functions, fine arts, practical arts, industrial arts, career education, teaching strategies, and management techniques.


ELED 5660-3. Energy Education. (SECE 5660.) Explores current energy problems. Students will examine such topics as fuels from plants, fuels from wastes, fossil fuels, nuclear energy, wind energy, geothermal energy, solar energy, and energy conservation. Included will be a demonstration of available educational resources for grades K-12. The purpose of the course is to make technical aspects of energy accessible to the lay person.

ELED 5730-3. Creative Experience in Literature. Will include selection of materials and development of materials, and development and presentation of storytelling, puppetry, flannel board storytelling, choral reading, slide/tape programs, movie making, creative drama, music, movement and art. Prereq: any two of the following courses - ELED 5310, 5320, 5330, or consent of instructor.

ELED 5740-3. Newspapers in Curriculum. Designed to simulate the purposeful use of newspapers to enrich the instructional program in all of the content areas of the school curriculum. The course will include an in-depth study of selection, development, and presentation of newspaper material with implications for teaching methods and techniques.

ELED 5775-1 to 3. Knowledge of Teaching. Designed for experienced teachers, this course will assist them to update their knowledge of research on teaching and extend their use of research findings in their classroom teaching. Prereq: teaching certificate.

ELED 5780-1 to 4. Storytelling. Explore the history, function, philosophy, and techniques of storytelling. This course will also include collecting, selecting, preparing, developing, and delivering stories. Research and resources will be emphasized.

ELED 5800-1 to 4. Curriculum Workshop for Elementary Teachers. Opportunity to work on projects and problems in the school in which the student is employed: conferences, study groups, discussion, and work in curriculum construction. Topics and credit hours vary. Prereq: 18 semester hours in education and teaching experience or consent of instructor.

ELED 5840-1 to 4. Independent Study. ELED 5910-1 to 4. Advanced Practicum: Elementary (SECE 5910.) This course is not to be used as an independent study.
but is to be used by students approved in advance by the director of teacher education. Prereq: consent of instructor. Fulfills the student teaching requirement for students seeking a second endorsement.

**SECONDARY EDUCATION CORE:**
(a) An additional 3 hours from either of these two courses:
- **SECE 5210-3** Models of Teaching:
- **SECE 6110-3** Curriculum Development and Implementation (This course is best taken toward the end of the M.A. program.)
(b) Two more advanced courses in the chosen specialist area.

For example, a math teacher might take **SECE 5430-3**, Teaching Aids in Mathematics Education, and **SECE 5410-3**, Advanced Methods in Secondary Mathematics. To acquire perspective, secondary teachers often take courses in elementary methods.

(c) It is recommended that secondary education candidates take at least one course from:
- **RDG 5020-3** Reading and Writing Strategies: Secondary Content Areas;
- **RDG 5200-3** Writing: Process, Development, Teaching;
- **LC 5410-3** Literacies.

(d) Students will then complete the course requirement of 36 semester hours by selecting additional courses in their specialist area from the programs of the School of Education or the College of Liberal Arts and Sciences, in conjunction with advisors.

Most secondary teachers have an area of specialization. Advisors will encourage students to broaden and deepen their knowledge of the discipline, developing a plan in the light of particular circumstances. A social studies teacher may take CLAS courses in history, sociology, or economics; an English teacher may take composition and literature. The selected courses will be of graduate rank, that is, in the upper division and taught by a member of the CU graduate faculty, and will have the prior approval of the student’s advisor.

**MINOR SUBJECT REQUIREMENT**

The purpose of a minor in the M.A. program is to expand the candidate's background in a specific area of interest. If a minor subject is required (see plans I and II above), it should be in a field other than secondary education and must have the prior approval of the minor department.

**ACCESS PROGRAM IN CURRICULUM AND INSTRUCTION WITH AN EMPHASIS IN SECONDARY EDUCATION**

The Curriculum and Instruction Secondary Education Program has an Access Program for students who wish to complete the master’s degree off campus. Courses are held at community college and other sites in the Denver metropolitan area.

Requirements and quality of instruction for this program are identical to those for the on-campus program. Students should contact their advisor for further information.

**COURSES**

**SECE 5060-3. Improvement of Instruction.** (ELED 5060.) Designed to assist the educator in the systematic improvement of instruction. Emphasis will be on emergent knowledge related to successful classroom practices, techniques of assessment, analysis and action related to the improvement of professional skills.

**SECE 5100-3. Curriculum/Program Development and Evaluation.** Fundamentals of curriculum and program development, including theoretical foundations of U.S. curriculum practical criteria to guide decision-making, specific models and processes for curriculum/program development and appraisal. Emerging issues, problems and trends

**SECE 5110-3. Supervision of Student Teachers.** (ELED 5110.) Designed to develop competency in the supervision of student teachers, including building a theoretical framework and developing skill in practical application.

**SECE 5170-3. Community and Interpersonal Relations.** (ELED 5170.) Provides an opportunity for pre-service teachers to develop communication and interpersonal skills that will enable them to facilitate positive student self-concept and interaction among professional educators, the community, and social groups. Exposes students to urban environment. Topics also include child abuse and its recognition.

**SECE 5200-3. Classroom Management.** (ELED 5210.) Instructional management, physical management, and behavior management are studied as interactive components in the establishment and maintenance of an effective learning environment.

**SECE 5210-3. Models of Teaching.** (ELED 5210.) Emphasis on learning, refining, analyzing and redesigning various teaching models including: inquiry, concept
SECE 5250-3. Theory and Practice in Teaching English. Curriculum, materials, methods, evaluation, and related aspects of instruction. This course is designed to integrate content and methodology.

SECE 5390-3. Seminar in Current Adolescent Literature. In-depth study and evaluation of books and films that can be used successfully with junior and senior high school students. Emphasis on materials published during the past two years.

SECE 5350-3. Issues and Problems in Science Education. Recent developments in theory, curriculum, methods, and materials in secondary science, examined for their contribution to the objectives of science education.

SECE 5360-3. Supervision of Science Curriculum. Workshop for supervisors of science in city school systems; basic content in science fields.


SECE 5400-3. Curriculum in Secondary Mathematics. Investigation of curriculum in middle and high school mathematics, development, history and trends, and pertinent research. Participants construct and share curriculum relevant to their interest.

SECE 5410-3. Advanced Methods and Strategies in Secondary Mathematics. In-depth investigation of specific methods and strategies suitable for teaching mathematics for middle and senior high schools. Participants model and share various strategies including the expository, discovery, laboratory, and Socratic methods.


SECE 5430-3. Teaching Aids in Mathematics Education. Examination, production, and use of manipulative aids, audiovisual aids, and other materials for teaching mathematics. Open to elementary and secondary teachers.

SECE 5440-3. Topics in Mathematics Education. An in-depth study of topics such as computers, testing, learning theory, mathematics laboratories. May be repeated as topics vary.

SECE 5460-3. Secondary Social Studies Methods and Curriculum Design. Recent development in theory and materials in the social studies are examined and present practices analyzed for their contribution to general goals of social studies education. Appropriate for secondary teachers and elementary teachers with a specialization in social studies.

SECE 5465-3. Teaching Critical Issues in Social Studies: An Interdisciplinary Approach. In-depth study of critical social issues related to a global function, national; (b) ethnicity, race, gender and minorities; (c) cross-cultural studies; and (d) current societal problems. This course requires an interdisciplinary approach and covers the structure of the social science disciplines. Prereq: a minimum of 24 semester hours in history and the social sciences.

SECE 5480-3. Museums in Education. (ELED 5480.) For elementary and secondary teachers, this course acquaints teachers with the educational resources extant in public institutions such as museums, zoos, historical societies, etc.

SECE 5490-3. Middle School Curriculum. (ELED 5490.) This course will explore the unique curriculum requirements of trans­esent youth. Topics to be addressed include team teaching, interdisciplinary curricula, flexible scheduling, basic skills development, guidance function, fine art, practical art, industrial arts, career education, teaching strategies, and management techniques.


SECE 5560-3. Energy Education. (ELED 5560.) Explores current energy problems. Students will examine such topics as fuels from plants, fuels from wastes, fossil fuels, nuclear energy, wind energy, geothermal energy, solar energy, and energy conservation. Included will be a demonstration of available educational resources for grades K-12. The purpose of the course is to make K-12 aspects of energy accessible to the lay person.

SECE 5740-3. Newspapers in the Curriculum. Designed to stimulate the purposeful use of newspapers to enrich the instructional program in all of the content areas of the school curriculum. The course will include an in-depth study of selection, development, and presentation of newspaper material with implications for teaching methods and techniques.

SECE 5780-1 to 4. Storytelling. (ELED 5780.) Explore the history, function, philosophy, and techniques of storytelling. This class also will include collecting, selecting, preparing, developing, and delivering stories. Research and resources will be emphasized.

SECE 5800-1 to 4. Curriculum Workshop for Secondary Teachers. Opportunity to construct curriculum relevant to teachers' interests. Topics and credit hours vary.

SECE 5840-1 to 4. Independent Study.

SECE 5910-1 to 4. Advanced Practicum in Teaching. This course is not to be used as independent study but is to be used by students approved in advance by the Director of Teacher Education. Prereq: consent of instructor. This course fulfills the student teaching requirement for students seeking a second endorsement.

SECE 5920-1 to 4. Readings in Secondary Education.

SECE 5930-3. Internship in Secondary Education.

SECE 5950-1 to 8. Master's Thesis.

SECE 6100-3. Seminar in Secondary Education. Students work on individual topics and report orally and in writing. Prereq: consent of instructor.

SECE 6110-3. Curriculum Development and Implementation. The course places curriculum development in the historical, social and political context of educational change, considering underlying concepts and assumptions, and examining the implications of implementation theory and practice for school restructuring and professional development. Prereq: graduate student status.

SECE 6950-4. Master's Thesis

Foundations

Coordinator: Maurice Holt
Office: NC, Fourth Floor
Telephone: 556-4366
Faculty: Professor: Marie E. Wirsing

The program in Foundations consists of interpretive, normative, and critical studies of educational beliefs and practices. It combines the scholarly traditions of academic disciplines with the study of educational institutions and problems. Courses are offered in the historical, philosophical, sociological, economic, political, religious, and comparative foundations of education.

PROGRAM REQUIREMENTS

The total minimum preparation for an M.A. degree in curriculum and instruction with an emphasis in foundations of education is 36 semester hours of course work (30 semester hours with thesis). Programs are mutually determined by advisor and
student, and each course of study differs as a whole from others.

COURSES

FNDS 5000-3. Teaching as a Profession. A general foundations of education course for preservice candidates. Provides a broad overview of education of the historical, sociological, philosophical, and legal foundations of education. Includes an examination of contemporary issues in schooling, schooling organizational patterns, and the professional rights and responsibilities of the teacher. (Graduate credit, but does not apply toward master's degree.)

FNDS 5050-3. Critical Issues in American Education. An examination of the social values and forces in American society which shape or influence the aims, philosophies, methods, content, and problems of the American educational enterprise.

FNDS 5100-3. Education in Other Countries. A comparative examination of the political, historical, philosophical, sociological, economic, religious and other foundational aspects of education in several selected countries.


FNDS 5300-3. Sociology of Education. A sociological appraisal of the school in American society with reference to the status, role, activities, and relationships within the school and of the school to other social institutions.

FNDS 5400-3. History and Philosophy of Early Education. An examination of Western intellectual heritage as it was shaped during the ancient and medieval periods; traces corresponding development of educational theory and practice and its continuing impact on modern society.

FNDS 5410-3. History and Philosophy of Modern Education. An examination of Western intellectual heritage from the 16th to the 20th Century; traces corresponding development of educational theory and practice and its continuing impact on modern society.


FNDS 5600-3. Politics and Education. An examination of the political forces affecting American education; includes a study of the interaction of the political and educational areas.

FNDS 5700-3. Religion and Education. An in-depth study of the constitutional and legislative provision and judicial decisions regarding religion and the American public school.

FNDS 5800-3. Seminar: Foundations of Education. An in-depth exploration of topics, issues, and ideas largely generated by students through their other course experiences in foundations. Prereq: at least one graduate level course in foundations and consent of instructor.

FNDS 5810-5814-1 to 3. Special Topics. Variable credit courses designed to deal with specific areas of content not covered in depth in other program offerings, e.g., the social structure of the classroom. Prereq: at least one graduate level course in foundations and consent of instructor.


FNDS 6920-3. Readings in Foundations of Education.

FNDS 6930-3. Teaching Internship in Foundations of Education.


FNDS 7370-1. Dissertation Seminar.

FNDS 7840-1 to 4. Independent Study.

FNDS 7930-3. Teaching Internship in Foundations of Education.

FNDS 8990-3 to 10. Doctor of Philosophy Dissertation.


Reading and Writing

Coordinator: Maurice Holt
Office: NC, Fourth Floor
Telephone: 556-4366
Faculty: Associate Professors: Lynn K. Rhodes, Nancy L. Shanklin
Assistant Professors: Sally Nathenson-Mejia

The master's program is designed to prepare teachers K-6, 7-12, or K-12. Reading is a credentialed program meeting the Colorado Department of Education requirements for Reading Teacher Endorsement. Therefore, students who obtain a master's degree in reading education from CU-Denver are certified to hold positions in public and private schools as special developmental and remedial reading teachers K-6, 7-12, or K-12. Additionally, this degree is valuable for elementary and secondary teachers who wish to enhance reading and writing instruction in their classrooms.

By placing emphasis on both reading and writing in the preparation of teachers, the master's program is at the forefront of the field. Both processes are approached from a socio-linguistic perspective that emphasizes children's construction of meaning rather than the learning of isolated skills. Importance is placed on using theory, research, and personal reflection to inform classroom practice. The program prepares teachers to become decision makers capable of developing child-centered curricula where each student's reading and writing abilities are assessed in order to address developmental or special needs. Special consideration is given to working with diverse ethnic populations.

CURRICULUM

Course offerings lead to an M.A. degree in curriculum and instruction with an emphasis in reading and writing and with a Reading Teacher Endorsement at one of three levels: K-6, 7-12, or K-12. The following core curriculum is required of all students seeking a master's degree regardless of level emphasized.

School of Education Core Curriculum (9 Hours)

REM 5000-3. Orientation to Research and Measurement in Education

Two of the following courses under advisement:

EPSY 5100-3. Advanced Child Growth and Educational Development

EPSY 5140-3. Advanced Child Growth and Development

LC 5150-3. Culture of the Classroom (recommended choice)

LC 5040-3. Multicultural Education

Any course, FNDS 5050 or above
Reading and Writing Curriculum
K–6 Endorsement (28 Hours)

RDG 5000-3. Effective Reading Instruction
or
RDG 5030-3. Reading and Writing: Early Childhood
RDG 5110-3. Reading: Process, Development, and Teaching
RDG 5200-3. Writing: Process, Development, and Teaching
RDG 5400-3. Assessing Literacy Development
RDG 5500-3. Individualizing Literacy Instruction
RDG 6910-4. Seminar and Practicum in Literacy: K–6
LC 5810-3. Workshop in Language Acquisition and Development
or
LC 5410-3. Literacies (recommended for intermediate teachers)
ELED 5310-3. Children’s Literature
or
ELED 5330-3. Current Literature for Children
An elective, chosen under advisement

Reading and Writing Curriculum 7–12
Endorsement (28 Hours)

RDG 5020-3. Reading and Writing Strategies: Secondary Content Areas
RDG 5110-3. Reading: Process, Development, and Teaching
RDG 5200-3. Writing: Process, Development, and Teaching
RDG 5400-3. Assessing Literacy Development
RDG 5500-3. Individualizing Literacy Instruction
RDG 6911-4. Seminar and Practicum in Reading and Writing: 7–12
LC 5810-3. Workshop in Language Acquisition and Development
or
LC 5410-3. Literacies (recommended choice)

SECE 5330-3. Seminar in Current Adolescent Literature
or
SECE 5380-3. Adolescent Literature
An elective, chosen under advisement

COURSES

RDG 5000-3. Effective Reading Instruction. Critically examines current reading instruction methodologies and the educational theories which support their use. Assists teachers in the development of an effective reading program from a whole language perspective. Course includes the use and development of literature units, author studies, reader's workshop, thematic units and basal readers as a means of integrating reading and elementary content areas.

RDG 5020-3. Reading and Writing Strategies in Secondary Content Areas. Explores the value and use of reading and writing in learning in content areas. Provides specific strategies for helping content area teachers increase the learning of their students through reading and writing.

RDG 5030-3. Reading and Writing: Early Childhood. Provides teachers with a basic understanding of reading and writing development in preschool and early primary grades. Specific strategies are considered for using and teaching reading and writing in early primary grades.

RDG 5050-3. Teachers as Readers and Writers. Teachers will engage in experiences designed to expand and improve their own literacy interests, abilities and attitudes. Literacy experiences will include readers' workshop, writers' workshop, literature studies, and authors' circles. In addition, teachers will reflect on their own and classmates' experiences as a basis for planning literacy experiences in school classrooms.

RDG 5110-3. Reading: Process, Development and Teaching. A variety of reading process theories are examined with a focus on those which are socio-psycholinguistic. The relationship between those process theories and reading development is considered as well as what is known about aspects of reading development. Finally, the relationship between process, development, and teaching is examined in detail.

RDG 5200-3. Writing: Process, Development and Teaching. A variety of writing process theories are examined with a focus on those which are socio-psycholinguistic. The relationship between process theories and writing development is considered as well as what is known about aspects of writing development. Finally, the relationship between process, development, and teaching is considered in detail.
EARLY CHILDHOOD EDUCATION AND EARLY CHILDHOOD SPECIAL EDUCATION

Division of Educational Psychology and Special Education

Division Coordinator: Laura D. Goodwin  
Office: NC, Fourth Floor  
Telephone: 556-3372

Faculty: Professor: William L. Goodwin  
Assistant Professors: Harriet Able-Boone, Donna Wittmer

The early childhood education program is a graduate program leading to a master's degree in early childhood education and/or certification in early childhood special education. Students may choose, via their course work and field experiences, to prepare for careers working with either young children with special needs birth to five years or young typical children birth to eight years.

The program is interdisciplinary in focus, drawing upon university resources in educational psychology, special education, communication disorders, nursing, and multi-cultural education as well as early childhood education, and community resources for occupational/physical therapy, pediatrics, and social work. There is a strong emphasis on field experiences in both regular and special education concentrations.

The program also offers specializations in infant birth to three and in families for students who wish to work in hospitals, center or home-based programs with infants who are at risk or have disabilities, and their families. The specializations are jointly offered on the CU-Denver campus and the University of Colorado Health Sciences Center.

Curriculum

The master's degree in early childhood with a certification in special education requires 39 semester hours of course work and 4 hours of practicum. Thirty-one semester hours are required for certification only. The master's degree in early childhood (regular education) typically requires 32 semester hours of course work and 4 semester hours of practicum. The two programs share course content in:

- Normal child growth and development
- Learning approaches with young children

Measurement and evaluation  
Basic statistics/research methods  
Multicultural education  
Research and current issues  
Early childhood curriculum and program development  
Working with parents and families

The early childhood special education program provides specialized training in:

- Developmental disorders birth to five
- Screening and assessment of young children
- Intervention strategies with infants and young children
- Behavior management
- Working as a member of the transdisciplinary team
- Working collaboratively with families
- Language development and language disorders
- Treatment of children who are neurologically impaired and chronically ill

The early childhood regular education program provides specialized training in:

- Language acquisition and development
- Reading and writing instruction
- Early childhood program administration

Infant Specialization Track

Coordinator: Laura D. Goodwin  
Office: NC, Fourth Floor  
Telephone: 556-3372

Faculty: Assistant Professors: Harriet Able-Boone, Donna Wittmer

The program is designed to provide students with the background and skills necessary for working with infants who are at risk or disabled and their families. The specialization is available to interested graduate students in the early childhood special education certification and master's degree programs, and the school psychology certification and master's degree programs. It is also available to interested graduate students in related fields, such as nursing, occupational and physical therapy, social work, and communication disorders.

The program is interdisciplinary in focus. University and community resources in communication disorders, counseling, nursing, occupational and physical therapy, pediatrics, school psychology, social work, and special education are utilized. Field work and site visits are planned in both medical and educational settings.
The specialization consists of four courses plus field work:

Medical and physiological aspects of developmental disabilities birth to three
Screening and assessment of young children
Early intervention strategies
Working with parents and families of young children

Infant practicum

Students in the early childhood master's degree program (special education emphasis) would take these courses by advisement as part of their program requirements of course work and practicum.

Students in the school psychology certification would take these courses by advisement, primarily as their electives. The certification program in school psychology requires 60 semester hours of course work, including 8 hours of field work.

Family Specialization Track

Coordinator: Laura D. Goodwin
Office: NC, Fourth Floor
Telephone: 556-3372
Faculty: Assistant Professors: Harriet Able-Boone, Donna Wittmer

The family specialization provides an in-depth focus on families. Students are provided with the theoretical background and skills to work with families of young special needs children. Students earn a Master of Arts degree. Students may also choose to complete certification requirements in early childhood special education.

The specialization consists of three courses and specific practicum experience in community-based, family-focused programs.

The courses include:

Working with parents and families of young children
Early intervention issues
Marital and family counseling

Rural Outreach Program in Early Childhood Special Education

The Early Childhood Special Education Program has an outreach program for students who wish to complete their certification requirements off-campus. Certification courses are offered at selected sites in western, southern, and eastern Colorado.

Requirements and quality of instruction for this program are identical to those for the on-campus program. Students should contact their advisor for further information.

Courses

ECF 5010-3. Curriculum and Program Development in Early Childhood Education. Principles of early childhood program development are reviewed in the areas of curriculum, staff development, and parent involvement. Linkages are made between child development and curriculum planning. Curriculum areas considered include language, preacademics, motor, social-emotional, science, social studies, and creativity.

ECF 5020-3. Approaches to Young Children's Learning. Review of approaches for facilitating the learning and development of young children. Examined are programs for children (infancy through age 8), including those developed under federal auspices. Approaches are considered in terms of (1) their differing views of intellectual, social, and physical development of young children; (2) their operation as program activities and procedures; and (3) their effects on children's learning.

ECF 5030-3. Directing Programs for Young Children. Analysis of organizational factors and instructional events in the classroom, facilitation of teacher effectiveness through supervisory feedback and inservice development. Special attention is given to supervisor-teacher relationships, parent-school-community relationships, and processes for feedback.

ECF 5040-3. Administrative Seminar. Emphasis on those topics required of administrators in E.C.E. programs in day-to-day operations (philosophy, finance, programming, management, community/parent relations, etc.). Special attention is given to unique administrative concerns in programs for special categories of children such as toddlers, developmentally delayed children, etc.

ECF 5060-3. Working with Parents and Families. Review of historical factors and research related to current trends in working with parents and families of exceptional children. The course presents content concerning family systems theory, various community services available to families, abused and neglected children, and an overview of successful programs that serve parents and families in the educational setting.

ECF 5070-3. Cognitive and Emotional Development and Disorders in Young Children. The primary focus of this course is the cognitive and social development of infants and young children, and problems that may occur during the process. Equally emphasized are intervention approaches for preschool children with cognitive and social/emotional handicaps. Implications for intervention from current research are considered.

ECF 5080-3. Language Development and Disorders in Young Children. Overview of normal language development, language components, and pertinent research related to language acquisition. Emphasis is placed on language problems commonly demonstrated by young exceptional children and appropriate intervention strategies.

ECF 5090-3. Neuromotor Development and Disorders in Young Children. This course provides an overview of normal and abnormal motor and neurological development in the infant and young child. Current treatment approaches for children with neuromotor disorders are examined, with emphasis on sensory integration and neurodevelopmental treatment. Also reviewed are sensory deficits: hearing and visual impairment.

ECF 5140-3. Measurement and Evaluation in Early Childhood Education. This course provides classroom experience in basic measurement concepts and in the screening and assessment of young children's cognitive, affective, language and psychomotor capabilities and characteristics. Traditional measurement techniques as well as nonreactive measures, human and video-observational methods are included. Evaluation of programs and persons in early childhood education settings are examined.

ECF 5200-3. Screening and Assessment of Young Children. A field-based course providing experience in the administration and scoring of a sampling of the most widely used screening and assessment instruments designed for use in infant and preschool classrooms. Students will have the opportunity to administer a variety of formal and informal tests including the Bayley and McCarthy scales.

ECF 5800-1 to 4. Workshop: Topics in Early Childhood Education. Topics and credit hours vary from semester to semester. ECF 5840-1 to 4. Independent study.

ECF 5911-3. Educational and Observational Practicum in Early Childhood Education. Includes planned experiences built around the clinic and E.C.E. classroom in operation. Students observe in public schools, Head Start, day care, and private preschool programs. The practicum will require 30 to 40 clock hours of field placement experience with
oncurrence classroom meetings. Opportunities for observation in special education classes are provided.

ECE 5920-1 to 4. Readings in Early Childhood Education.

ECE 6100-3. Medical and Physiological Aspects of Developmental Disabilities. Neurolological/physiological development and disorders as well as appropriate intervention techniques for the young child. Additional course content will contribute to the course by focusing on the developmental issues/concerns related to medically fragile young children.

ECE 6110-3. Intervention Strategies for Handicapped and At-Risk Infants. In-depth study of intervention strategies, curricula, and program models for young children birth to three years. Topics may include selection, implementation, and evaluation of the different techniques. The course will have an interdisciplinary focus.

ECE 6690-3. Seminar: Research and Current Issues in Early Childhood Education. Research methods are reviewed and then selected topics are considered. Emphasis is on research findings and current issues of importance to teachers, administrators, specialists, and researchers in early childhood and early childhood special education.


ECE 6911-2 to 4. Practicum in Early Childhood Education. Field-based experiences in settings for young children (preschool administration, day-care center management, parent program directorship, etc.) that are closely linked to the student's professional goals. Requires a minimum of 110, 165, or 220 clock hours under supervision. (2, 3, or 4 credit hours respectively.)

ECE 6912-1 to 4. Practicum: Early Childhood Special Education. Field-based experiences in settings for young handicapped children including diagnostic clinics, Project Child Find, hospital and/or classroom. The practicum requires 300 clock hours under supervision. ECE 6913-3. Practicum in working with parents and families.


ADMINISTRATION, SUPERVISION AND CURRICULUM DEVELOPMENT

Division Coordinator: Mike Charleston
Office: NC 5024
Telephone: 556-4857
Faculty: Professors: Richard P. Koeppel, Michael J. Murphy
Associate Professors: Paul Bauman, Mike Charleston, W. Michael Martin
Assistant Professors: Sharon Ford, L.A. Napier, Nancy Sanders
Emeritus: Bob L. Taylor

The major responsibility of the Administration, Supervision and Curriculum Development program faculty is to prepare leaders for public schools in Colorado and the nation. Currently, the Type D Administrator Certificate is required for people seeking building-level and district-level administrative positions in Colorado.

The Program

The University of Colorado at Denver offers three degree programs in addition to the Administrator Certification Program.

Doctor of Philosophy Degree: primarily an academic degree. Consult the program office for details.

Specialist in Education Degree: available to those who hold an M.A. and now seek Colorado administrator certification or a specialized program; and

Master of Arts Degree: designed for those who hold no graduate degree and who seek Colorado administrator certification or a specialized program in administration, supervision and curriculum development;

Certification Only: available for those who hold a graduate degree and who seek only Colorado administrator certification.

Doctor of Philosophy (Ph.D.)

Dependent on graduate work completed, students seeking the Ph.D. will be expected to complete 40 semester hours of course work leading up to the comprehensive examination and admission to candidacy. In addition, 30 dissertation credits are required. The course plan will be developed in consultation with professors in the student's proposed area(s) of concentration and with the approval of the student's advisor and committee.

Transfer of doctoral work will be considered and requires the approval of The Graduate School and the advisor. Students may take elective course work in related University departments with advisor approval.

REQUIRED COURSES

2. Doctoral Seminar in Educational Leadership (EDUC 7825-2).
3. Introduction to Research Methods (REM 5200).
5. Experimental Design, Survey Methods, Policy Studies, Naturalistic Research, or other advanced research methods course.

Specialist in Education (Ed.S.)

The Ed.S. degree program affords opportunity for advanced graduate study and/or administrator certification. Thirty semester hours of graduate credit beyond the M.A. degree are required. The program is intended to serve individuals who have a graduate degree and who now seek administrator preparation or certification, but who do not wish to pursue a doctorate. Completion of the Specialist in Education degree DOES NOT qualify persons for the Administrator Certificate. The Specialist in Education degree does not require a thesis. A 12-hour final written comprehensive examination is required.

Master of Arts (M.A.)

The M.A. requires course work totaling 36 semester hours beyond the bachelor's degree. Completion of the master's degree program DOES NOT qualify persons for the Administrator Certificate. No thesis is required, but candidates must successfully complete a 4-hour comprehensive examination.

COURSE PLAN

Level I. Core (9 semester hours total)

Students must select at least one course in each of the following three areas:

1. An advanced psychological foundations of education course (not EPSY 5000) or Special Education.
2. Social/Philosophical Foundations or Multi-cultural Education. Most foundations courses are acceptable (alter
approval from advisor) except
FND5 5000.
3. A research and evaluation methodology
or statistical methods course (not
REM 5000). (Required for M.A. but not
for certification.)

Level II. General Educational
Administration (12 semester hours)
ELED/SECE 5100 Curriculum Program
Design and Evaluation
EDUC 5830. Governance and
Administration of
Education
EDUC 5831. School Law
EDUC 5832. Group Development and
Training

Level III. Administrative Skills and
Technology (17 semester hours)
EDUC 5050. Computer Applications
to Educational Management
EDUC 5833. School Business Management
EDUC 5835. Supervision of
Instruction
EDUC 7420. Personnel Development
and Training
EDUC 7430. School and Community
Relations
EDUC 5834. Seminar: School
Administration

The Plan II Master of Arts degree
requires no thesis, but a final written
comprehensive examination is required.

Colorado Administrator
Certification

Principals: Certification endorsement as
a building level principal is available
for elementary, middle, and senior high
school levels. Current Colorado Depart­
ment of Education regulations require
that specified competencies be satisfac­
torily met. Forty-three semester hours are
required to meet these for senior and mid­
dle level certification. Forty-five semester
hours are required for elementary certifi­
cation. These semester hours must be
beyond the B.A. A master’s degree is
required prior to certification. The follow­
ing courses (in addition to those listed
under the M.A. degree) are required for
endorsement at the various school levels.

Senior High School
ELED/
SECE 6110 Curriculum Development
and Implementation
EDUC 7370. Administration and
Supervision of the Senior
High School
EDUC 7931. Internship in Educational
Administration and
Supervision

Middle Level School

EDUC 7560. Administration and
Supervision of the
Middle Level School
EDUC 7931. Internship in Educational
Administration and
Supervision

Elementary School

EDUC 7350. Elementary Principalship
Intensive
EDUC 7360. Administration and
Supervision of the
Elementary School
EDUC 7931. Internship in Educational
Administration and
Supervision

Superintendent: Administrator certification
endorsement for the superintendency
is also available. Such endorsement
requires:
1. 60 semester hours beyond the B.A.
degree including an M.A. or higher
degree.
2. Colorado Administrator Certification,
building-level endorsement.
3. Completion of at least the following
courses in addition to a building-level
administrator endorsement:
EDUC 7400. School Finance
EDUC 7410. Educational
Facilities Planning
EDUC 7931. Internship in Educational
Administration and
Supervision

4. Completion of 3 courses and any addi­
tional requirements at the University of
Colorado as determined by advisor.
5. Formal admission to the ACS program.

Access Program in
Administration, Supervision
and Curriculum Development

For information regarding access pro­
grams please call 556-4857.

Admission Criteria/Guidelines

MASTER OF ARTS (M.A.), SPECIALIST
IN EDUCATION (ED.S.), AND
CERTIFICATION PROGRAMS

1. Grade-Point Averages. Undergraduate—
2.75 or better on a 4-point scale;
Graduate—3.0.

2. Examination Scores. Either, not both:
Miller Analog Test (MAT)—44 or
higher; Graduate Record Examination
(GRE)—900, or higher, combined verbal
and quantitative scores.

3. Review of letters of recommendation
and of response to item 6 on the
Application for Graduate Admission—
Part II Form.

4. A writing sample may be required.

DOCTOR OF PHILOSOPHY (PH.D.)

The criteria/guidelines are the same as
those above, except:
1. GRE scores must be submitted. A mini­
mum of 1,000 is required for considera­
tion for regular admission (combined
verbal and quantitative scores).

2. Grade-Point Average (GPAs). Graduate
GPAs above 3.0 are required and
expected. Degree of success in previous
graduate studies is given careful consid­
eration. Undergraduate GPAs are also
considered.

3. Considerable weight will be given to
the quality of the written responses
submitted with the Part II (6) Application
for Graduate Admission form,
as above.

4. A writing sample may be required.
(For information about and to make
arrangements for taking either the
MAT or GRE, call the Testing Office
at 556-2861.)

Please Note. These are criteria/ guide­
lines to be considered by the faculty com­
mitee which reviews applications for
admission to these programs. Neither fail­
ing to meet any one of the criteria nor
meeting the minimum standards of all cri­
teria automatically results in recommenda­
tions to deny or to admit admission.
All application materials are reviewed
together to determine the likelihood of
success in the programs, and admission
decisions are made only after reviewing
the material as a whole.

Program Information

Individuals interested in any of the pro­
grams are encouraged to contact program
area faculty to discuss these programs.
Conferences prior to application are
encouraged and welcomed. Following
admission, students are expected to maintain frequent conferences with assigned advisors to plan and develop programs of study.

Courses

EDUC 5050-3. Computer Application for Educational Management. A study of the theoretical and applied knowledge of central and school-based administrative educational applications of modern computer technology.

EDUC 5070-3. Elementary School Curriculum. An integrating course dealing with the history, development, problems, and practices of the curriculum of the elementary school.

EDUC 5090-3. Senior High School Curriculum. This course is concerned with the history, development, principles, problems, practices and trends of the curriculum of the senior high school.

EDUC 5700-6. Administrative Leadership in Educational Organizations. This seminar will introduce students to key concepts, theories and research in providing leadership to educational organizations. Special emphasis will be placed upon the topics of organizational behavior, leadership, culture change and power as they relate to the administrative role.

EDUC 5710-6. Administering the Environment of Public Schools. A seminar course which will focus on problems and issues in developing an effective school environment. Emphasis will be placed on the inter-relationships of law, finance, strategic planning, culture, political governance, and school/community relations. Prereq: EDUC 5700.

EDUC 5720-6. Supervision of the Curriculum and Instructional Program of the School. This seminar addresses the supervisory issues involved in administering the curricular and instructional program of the school. Special emphasis is placed upon teacher appraisal, assessment techniques, curriculum design and instructional effectiveness. Prereq: EDUC 5700 & 5710.

EDUC 5730-6. Administering the School Improvement Process. A seminar course focusing on problems and issues in developing effective schools. This course builds on concepts from organizational behavior and leadership presented in an earlier course in the sequence and orients the students toward planning, executing and assessing school improvement programs. Emphasis is placed on working through teachers to improve school capacity. Prereq: EDUC 5700, 5710 & 5720.

EDUC 5830-3. Governance and Administration of Education. Development of governance structures and of administration as a field of study in education. Influence of governance and views of administration on educational organizations’ goals, functions, and personnel. Required for master's and Type D certification students.

EDUC 5831-3. School Law. Recent developments including administrative implications of significant court decisions to school operations. For superintendents, principals, school board members, prospective administrators, and teachers.

EDUC 5832-3. Group Development and Training. Organizational theory and practice for school leadership personnel with emphasis on group and organization development, group problem identification and solutions, and conflict management skills and processes, role behaviors, and goal setting.


EDUC 5836-1 to 4. Workshop: Educational Administration, Curriculum and Supervision.

EDUC 5840-1 to 4. Independent Study. Master’s.

EDUC 5930-1 to 4. Internship in Administration.

EDUC 5931-1 to 6. Internship in Curriculum.

EDUC 5950-1 to 8. Master’s Thesis.

EDUC 6840-1 to 4. Independent Study.


EDUC 7120-3. Curriculum of Middle Level School. The course deals with the history, development, principles, problems, practices, and trends of the curriculum of the middle level school.

EDUC 7140-2. Student Activities Curriculum. Principles, problems, and procedures for improvement of extra class activities, student councils, home rooms in the secondary school, etc.


EDUC 7160-3. Processes and Materials in Curriculum Appraisal. Designed to provide curriculum workers with skills in the process of assessment of curriculum programs and skill in the appraisal of curriculum materials.

EDUC 7200-1 to 6. Administrative Leadership and Values Appraisal. Examination of the core values underlying the program in educational administration; value development in individuals as they relate to the purpose of public schooling in today’s society.

EDUC 7210-1 to 6. Educational Policy-Making in a Democratic Society. This course will provide students with relevant theories, research and practice related to administrative policy making in educational organizations. It will focus on ways of thinking about societal and schooling tensions and will include a focus on governance, planning, community participation, politics, working with groups, policy arenas, conflict management and the change process. Prereq: consent of instructor.

EDUC 7220-1 to 6. Administrative Leadership, Power and Authority. This course will focus on preparing school leaders to understand power relations in schooling, the relationship between leadership and power and the relationship between power, change and leadership in educational institutions. Prereq: consent of instructor.

EDUC 7230-1 to 6. Organizational Performance in Schools. This course examines ways of thinking about schools as organizations that deliver educational services and are also places of employment for administrators, teachers, and other staff members. The course will also focus on ways to diagnose and change school performance. Prereq: consent of instructor.


EDUC 7350-2. Elementary Principalship Intensive. Offered summers only. Two-week in-depth examination of the elementary school principalship. Required for Type D administrative certification, elementary school. Consent of instructor required.

EDUC 7360-3. Administration and Supervision of Elementary School. For administrators and teachers. Purposes, practices,
and trends in administration and educational leadership.
EDUC 7370-3. Administration and Supervision of Senior High School. Current administrative principles and practices essential to effective organization and management, with emphasis on the educational leadership of the principle.
EDUC 7380-2. Doctoral Seminar: Theory of Educational Administration. Study of organizational models, theories, and communication patterns; leadership roles and behavior, and organizational change. Attention to recent research in administrative theory.
EDUC 7410-3. Educational Facilities Planning. Offered yearly. Determination of school plant needs; relation of educational and architectural services; criteria of adequate school plants, site development, building operation and management; financial problems.
EDUC 7430-3. School and Community Relations. Examines interactions of schools and their communities; citizen role/involvement in governance of education, internal and external communication concepts and practices, politics of education, community power and pressure groups, and organizational cultural and climate.
EDUC 7490-2. Doctoral Seminar.
EDUC 7560-3. Administration and Supervision in the Junior High School and Middle School. Purposes, practices, and trends in administration of the middle level school. Current administrative principles and practices essential to effective organization and management. Emphasis is on leadership of the principal at the middle level school.
EDUC 7630-2. Doctoral Seminar: Junior/Senior High School Education. For advanced students. Problems, theories, and trends in secondary education. Includes field work and individual projects.
EDUC 7800-3. Doctoral Research Seminar: Education Administration, Curriculum and Supervision. A required seminar in educational research for all Ph.D. students in curriculum, administration, and supervision. The seminar focuses on doctoral research study in these areas of educational research.
EDUC 7810-3. Doctoral Seminar in School Law. An in-depth examination of the American legal process as it pertains to administration, planning, and delivery of educational programs. Involves self-selected research followed by individual or group presentations.
EDUC 7825-2. Doctoral Seminar in Educational Leadership. Seminar dealing with processes and patterns of educational leadership in the schools. Various theories of leadership are considered in relation to students' leadership behaviors. May be taken more than one semester for credit with advisor's approval.
EDUC 7840-1 to 4. Independent Study. Doctor's.
EDUC 7911-1 to 4. Practicum in Education Administration, Supervision and Curriculum.
EDUC 7921-1 to 4. Readings in Education Administration Curriculum and Supervision.
EDUC 7931-1 to 6. Internship in Educational Administration and Supervision. Consent of instructor required.
EDUC 7932-1 to 10. Internship in Curriculum. Consent of instructor required.
EDUC 8894-1 to 10. Doctoral Dissertation. Ph.D.
EDUC 8897-1 to 10. Doctoral Dissertation. Ed.D.

Instructional Technology
Program Area Coordinator: David H. Jonassen
Office: NC, Fifth Floor
Telephone: 556-3354
Faculty: Professors: Minaruth Galey, David H. Jonassen
Associate Professors: Martin Tessmer, Duane K. Troxel, Brent Wilson
Assistant Professors: R. Scott Grabinger, Dian Walster
Emeritus: Bettie R. Helser

Ph.D. PROGRAM
The Ph.D. in Administration, Supervision and Curriculum Development with an emphasis in Instructional Technology is designed for advanced graduate study in this field. The program is intended for students who are professionally committed to the field, as evidenced by previous professional experience in public or higher education, corporate training and development, or educational technology. The program will stress collegial and collaborative relationships with faculty in designing and carrying out research and development programs. Graduates will assume leadership roles in business, universities, or other agencies committed to the meaningful application of various technologies to instruction.

ADMISSION REQUIREMENTS
These criteria will be used to evaluate your application. No single criterion is necessary or sufficient for admission.
1. At least three years of successful, relevant professional experience (teaching, business, or other).
2. Master's degree in a related field from an accredited institution with a grade-point average of 3.2 or higher.
3. Graduate Record Examination completed within the past five years, with a combined verbal and quantitative score of 1000 or higher.
5. Grade-point average of 2.9 in last 60 hours of the bachelor's degree.
6. Evidence of scholarly writing ability to be submitted with the application (for example, master's thesis, project report, published article(s), or technical report).
7. Three letters of recommendation from individuals capable of evaluating your potential for graduate study.

PROGRAM REQUIREMENTS
Course Work
66 or more semester hours beyond the master's, depending upon prior educational experience, including:
36 hours or more of course work
30 hours or more of dissertation credit

Residency
Enrollment in 8 or more semester hours for three consecutive semesters OR Enrollment in 24 semester hours within any 18-month period.
Additional residency experiences will be defined for the individual by his/her
committee. Examples include graduate/teaching assistantships and internships.

**Preliminary Qualifying Examination**

Taken after 8–12 semester hours of course work: written paper plus oral examination.

**Comprehensive Examination**

After completion of course work, two five hour exams over six areas.

**Dissertation Study and Oral Examination of Dissertation Study**

**Program of Study**

**GENERAL EDUCATION TECHNOLOGY CORE**

(Equivalent completed prior to program or taken in addition to the Doctoral Core.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EPSY 5240-3</td>
<td>Cognition and Instruction</td>
</tr>
<tr>
<td>IT 5110-3</td>
<td>Instructional Design: Front End Analysis</td>
</tr>
<tr>
<td>IT 5120-3</td>
<td>Instructional Development: Strategy Selection and Development</td>
</tr>
<tr>
<td>IT 5610-3</td>
<td>Computer-Based Lesson Authoring</td>
</tr>
<tr>
<td>REM 5100-3</td>
<td>Basic Statistics</td>
</tr>
</tbody>
</table>

**DOCTORAL CORE**

The following five seminars are required of all Ph.D. students. These courses are offered on a regular three year rotation:

<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>IT 6710-3</td>
<td>Theoretical Bases of Instructional Technology</td>
</tr>
<tr>
<td>IT 6720-3</td>
<td>Research in Instructional Technology</td>
</tr>
<tr>
<td>IT 6730-3</td>
<td>Comparative Models of Instructional Design</td>
</tr>
<tr>
<td>IT 6740-3</td>
<td>Learning Processes Applied to Instructional Technology</td>
</tr>
<tr>
<td>IT 6750-3</td>
<td>Current Trends and Issues in Instructional Technology</td>
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</tbody>
</table>

**RESEARCH CORE**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>REM 7100-3</td>
<td>Intermediate Statistics</td>
</tr>
<tr>
<td>REM 6100-3</td>
<td>Methods of Qualitative Inquiry</td>
</tr>
</tbody>
</table>

Electives

Other courses negotiated in consultation with the student’s program committee.

**Master of Arts**

The Administration, Supervision and Curriculum Development degree with an option in Instructional Technology and the M.A. in Library Media are awarded for study in the area of instructional technology. There are four program tracks under these degree programs. The School Library Media Specialist Certification track leading to the M.A. in Library Media is designed to prepare school library media specialists for elementary and secondary school library media centers. Upon completion of either program, graduates meet the requirements for endorsement as school library media specialists by the Colorado Department of Education. The Corporate Instructional Development and Training track of the M.A. in Administration, Supervision and Curriculum Development is designed to prepare trainers in corporate, agency, and military settings. The program of study is based upon nationally defined competencies and a regional needs assessment. This program track requires study in the College of Business in addition to education. The Instructional Computing track is designed to prepare teachers to use computing resources in the classroom and in other educational settings, and to provide computing leadership in their schools and districts. These individuals will be able to design, evaluate, and implement computer-based learning materials into existing curricula and programs. The Instructional Technologist track provides the opportunity for students to work with a faculty committee in defining an individual program of study in the area of instructional technology. The student needs to have a clear purpose and direction before electing this track. Consultation with a committee is essential.

**SCHOOL LIBRARY MEDIA SPECIALIST PROGRAM TRACK**

Three programs are offered that prepare certified teachers for library media specialist positions (school librarians) in elementary and secondary school library media centers. These programs are a 29 semester hour program for a School Library Media Specialist at either the elementary (K–6) level or the secondary (7–12) level and a master’s degree program for a School Library Media Specialist, K–12. Upon completion of either program, graduates meet the requirements for endorsement (Standard 8.02.5) as stated by the Colorado Department of Education. In addition, the programs are accredited by the North Central Association (NCA) and the National Council for Accreditation of Teacher Education (NCATE).

To be endorsed as a School Library Media Specialist an applicant shall hold or be eligible for a Type A or equivalent certificate and shall have completed the following requirements:

1. Hold a bachelor’s or higher degree from an accredited institution of higher education and have completed an approved upper division or graduate program in school library media in an accepted institution of higher education.
2. Have completed a minimum of one year teaching experience (not in school library media) while holding a valid Colorado Type A or equivalent certificate.
3. Have knowledge and skills in the following areas:
   a. Administration of school library media programs
   b. Cataloging and classification
   c. Media production and design
   d. Reference services
   e. Selection, evaluation, and utilization of library media
   f. Research and evaluation
   g. Children and young adult’s literature
   h. Curriculum development and instructional design
4. Have completed a supervised practicum or internship in an elementary and/or secondary school at the appropriate grade level(s) for endorsement (elementary, secondary, or K–12). The practicum or internship may be waived upon comparable media experience. The School Library Media Specialist track prepares candidates to meet these standards.

**Admission Requirements**

1. Bachelor’s degree from an accredited institution with a grade-point average of 2.75 or higher.
2. A Colorado Type A teaching certificate. A teaching certificate from another state may be accepted for admission, but the Colorado certificate must be acquired prior to completing 12 semester hours of instruction.
3. Completion of a minimum of one year teaching experience (not in library media) while holding a valid Colorado Type A or equivalent (may be completed concurrently, but requirement must be satisfied by the time the degree is awarded).
4. Four letters of recommendation from individuals who are in a position to evaluate your professional competence as well as your potential for graduate study.
5. A letter accompanying your application which details your educational and professional experiences, your reasons
for pursuing the endorsement, and the professional contribution which you hope to make after completing the program. There is no interview requirement, so this may be your only opportunity to convince the faculty of your verbal fluency and your professional commitment.

Master's degree candidates (K–12) must also submit Graduate Record Examination scores (verbal and quantitative) of 950 or higher OR Miller Analogies Test score of 45 or higher. NOTE: This requirement may be waived if you have completed a master’s degree in a related field prior to application to this program.

Program Requirements

A. SCHOOL LIBRARY MEDIA SPECIALIST, K-12, MASTER'S DEGREE

1. At least 37 semester hours of course work:
   - IT 5010-3. Instructional Role of the Media Specialist
   - IT 5020-3. Selection/Evaluation of Educational Media
   - IT 5030-3. School Reference Service
   - IT 5040-3. Cataloging/Classification of Educational Media
   - IT 5050-3. Administration of Library Media Programs
   - IT 5310-3. Production of Educational Materials
   - IT 5310-3. ELED 5310-3. Children's Literature
   - SECE 5380-3. Adolescent Literature
   - IT 5912-2. Instructional Role of the Media Specialist
   - IT 5912-2. Field Experience in Library Media—Elementary
   - IT 5920-3. Computer-Based Tools for Learning/Productivity
   - REM 5200-3. Introduction to Research Methods
   - LC 5040-3. Multicultural Education

   Comprehensive Examination. During the final semester of enrollment, you will complete a four-hour written examination covering the curriculum. The examination may be repeated once after a period of three months.

B. SCHOOL LIBRARY MEDIA SPECIALIST, K–6 OR 7–12 ENDORSEMENT

At least 29 semester hours of course work:
   - IT 5010-3. Instructional Role of the Media Specialist
   - IT 5020-3. Selection/Evaluation of Educational Media
   - IT 5030-3. School Reference Service
   - IT 5040-3. Cataloging/Classification of Educational Media
   - IT 5050-3. Administration of Library Media Programs
   - IT 5310-3. Production of Educational Materials
   - IT 5310-3. Computer-Based Tools for Learning/Productivity
   - REM 5200-3. Introduction to Research Methods
   - LC 5040-3. Multicultural Education

   K–6 ENDORSEMENT ADD:
   - ELED 5310-3. Children's Literature
   - IT 5911-3. Field Experience in Library Media—Elementary

   7–12 ENDORSEMENT ADD:
   - SECE 5380-3. Adolescent Literature
   - IT 5912-2. Field Experience in Library Media—Secondary

   CORPORATE INSTRUCTIONAL DEVELOPMENT AND TRAINING TRACK

   This program has been designed to meet the specific instructional needs of trainers in corporate settings. The competencies taught are based upon three separate needs assessments conducted by and with major professional associations in the field. The program is designed to prepare graduates for working in a corporate or agency training environment as a trainer or instructional developer. In addition to traditional admission requirements, we intend to accept only outstanding individuals with a professional commitment and outstanding written and interpersonal communication skills.

   Graduates of this program will be prepared to assume positions as trainers and/or instructional developers in business, industry, government agencies, military, or other training facilities.

Admission Requirements

In order to be admitted to this program you need to provide evidence of each of the following:

1. Bachelor's degree in a relevant field from an accredited institution of higher education with a grade-point average of 2.85 or higher.
2. Graduate Record Examination score (combined verbal + quantitative) of 950 or higher OR Miller Analogies Test score of 50 or higher.
3. Three letters of recommendation from individuals who are in a position to evaluate your professional competence as well as your potential for graduate study.
4. A letter of application detailing your educational and professional experiences, your reasons for pursuing graduate study, and the professional contributions which you believe that you will be able to make after completing the degree. There is no interview requirement for this program, so this may be your only opportunity to convince the faculty of your commitment.
5. At least two samples of your writing. These may be articles, instructional materials, reports, or proposals.

Program Requirements

PROFESSIONAL ORIENTATION CORE
   (six or more hours of the following from the Graduate School of Business Administration)
   - BUSN 6040-3. Human Behavior in Organizations
   - MGMT 6320-3. Organizational Development
   - PSY 5150-3. Organizational Psychology

LEARNING FOUNDATION CORE
   (all required)
   - EPSY 5240-3. Cognition and Instruction
   - EPSY 5220-3. Adult Learning and Education
   - REM 5400-3. Introduction to Evaluation of Programs and Persons

INSTRUCTIONAL DEVELOPMENT CORE
   (all required)
   - IT 5110-3. Instructional Design: Front End Analysis
   - IT 5120-3. Instructional Development: Strategy Selection and Development
   - IT 5150-2. Analyzing Learner Characteristics
   - IT 6100-2. Managing Instructional Development Consultation
   - IT 6120-2. Instructional Development Consultation
   - IT 6130-2. Formative Evaluation of Instructional Materials

PRODUCTION CORE
   (seven or more hours required)
   - IT 5410-3. Designing Instructional Textual Materials
T 5600-3. Computer-Based Lesson Authoring
T 5610-3. Developing Computer Based Instruction
T 5310-3. Production of Educational Materials
T 5370-3. Portable Video Production for Instruction/Training

Internship - 3 or more

The internship is the culmination of the student’s program and is completed in lieu of a comprehensive examination or a thesis. It is designed to provide the student with the opportunity to apply what has been learned and to develop a portfolio of relevant experiences and products that should assist in placement.

INSTRUCTIONAL COMPUTING TRACK

This track is intended to develop personnel in schools who are able to administer and apply technologies in classrooms and other instructional settings. The instructional computing graduate has responsibilities that include computer skills; curriculum planning and hardware; staff development; software evaluation; design, production, and evaluation of courseware; and management of computers in the classroom.

Admission Requirements

1. Bachelor’s degree from an accredited institution of higher education with a grade-point average of 2.85, or higher.
2. Graduate Record Examination score (combined verbal + quantitative) of 950 or higher OR Miller Analogies Test score of 45 or higher.
3. Three letters of recommendation from individuals who are in a position to evaluate your professional competence as well as your potential for graduate study.
4. A letter accompanying your application which details your educational and professional experiences, your reasons for pursuing graduate study, and the professional contribution which you hope to make after completing the degree. There is no interview requirement, so this may be your only opportunity to convince the faculty of your verbal fluency and your professional commitment.

Note: If you are seeking a position in the public schools, a Colorado Type A teaching certificate is required. A teaching certificate from another state may be accepted, but the Colorado certificate must be acquired prior to completing 12 semester hours of instruction.

Program Requirements

Complete 36 semester hours from the following program of study:

INSTRUCTIONAL DESIGN AND FOUNDATIONS

Select with your advisor 12 semester hours from the courses below:
IT 5110-3 Instructional Design: Front End Analysis
IT 5120-3 Instructional Development: Strategy Selection and Development
EPSY 5240-3 Cognition and Instruction
REM 5400-3 Introduction to Evaluation of Programs and Persons
EDUC 5830-3 Governance and Administration of Education

CURRICULUM INTEGRATION

Complete the following courses:
IT 5510-3 Integrating Computers in the Curriculum
IT 5610-3 Computer-Based Lesson Authoring

TOOLS AND APPLICATIONS

Select at least 7 semester hours from the courses below.
IT 5520-3 Application of Computer-Based Utility Programs
IT 5550-2 Information Storage and Retrieval
IT 5560-3 Telecommunications and Networking in Education
IT 5990-3 Special Topics: Desktop Publishing in Education
IT 6510-3 Computer Graphics Systems
IT 6620-3 Intelligent Computer-Based Instruction

COMPUTER-BASED PRODUCT DESIGN

Select at least 5 semester hours from the courses below.
IT 5620-3 Developing Computer-Based Instruction
IT 5640-3 Hypermedia/Multimedia Learning Environment
IT 5630-2 Designing Computer-Based Simulations
IT 6530-3 Interactive Video

Master’s Project

In order to fulfill the comprehensive examination requirement, you will complete a Comprehensive Master’s Project. This project fills the role of a comprehensive examination. During your final semester of instruction, you will complete a project on a problem area chosen in consultation with your advisor. The project will be one of the following types: (1) development, (2) evaluation, or (3) research. A development project results in an instructional package making use of computers as a teaching tool or resource. An evaluation project either reviews computer-based curriculum materials in a chosen domain or evaluates a program or product in a realistic setting. A research project investigates a theoretical problem using established qualitative or quantitative methods of inquiry.

Master’s advisors may choose to adapt or waive any of the above requirements if a student demonstrates competence in selected competency areas. The waiving of requirements allows you greater flexibility in choosing electives for your program of study.

INSTRUCTIONAL TECHNOLOGIST TRACK

This track is provided to permit students to specialize in an area of instructional technology not described in the other three tracks. Possible specializations may include:
- Instructional television production
- Instructional materials production
- Computer-based instructional system design
- Health sciences education
- Learning resources

Admission Requirements

1. Bachelor’s degree from an accredited institution with a grade-point average of 2.85 or higher.
2. Graduate Record Examination scores (verbal + quantitative) of 950 or higher OR Miller Analogies Test score of 45 or higher. Note: This requirement may be waived if you have completed a master’s degree in a related field prior to application to the program.
3. Three letters of recommendation from individuals who are in a position to evaluate your professional competence as well as your potential for graduate study.
4. A letter accompanying your application which details your educational and professional experiences, your reasons for pursuing graduate study, and the
Courses

IT 5010-3. Instructional Role of the Media Specialist. Analysis of the instructional and curricular role of the media specialist in selecting, identifying, and producing instructional resources and interacting with faculty. Emphasis on instructional design and curriculum development.

IT 5020-3. Selection and Evaluation of Educational Media. Policies, procedures, selection aids, and evaluation criteria needed to develop and maintain a school library media collection are studied.


IT 5040-3. Cataloging and Classification of Educational Media. Terminology, philosophy, and practice in the application of cataloging, classification, and filing pertaining to various types of media.

IT 5050-3. Administration of Library Media Programs. Problems in the organization and administration of educational media programs that are an integral part of the teaching and learning process in the public schools.

IT 5110-3. Instructional Development Process. Instructional design principles and procedures, including performance analysis, needs assessment, objectives, task analysis, and criterion test design. Required for all instructional technology students.

IT 5120-3. Instructional Development: Applying Models and Strategies. Instructional development principles and procedures for developing instructional sequences for facts, concepts, procedures, and principles. Application of different instructional and development models.

IT 5130-3. Instructional Message Design. Principles and practices for designing textual, visual, and auditory instructional messages based upon the behavioral sciences.

IT 5150-3. Analyzing Learner Characteristics. An introduction to the analysis of learner characteristics and styles and how they impact on learning, with emphasis on instructional design implications. For students in the corporate training and instructional technologist tracks.

IT 5180-3. Instructional Technology for Teachers. Basic procedures for selecting, producing, evaluating, and utilizing instructional media/technology, including microcomputers and television, in the instructional process. Required only for teacher certification program.
experience with word processing, data base or spreadsheet programs.

I T 5610.3. Developing Computer-Based Instruction. Principles of instructional design applied to designing computer-based instruction.

I T 5630.2. Designing Computer-Based Simulations. Design, development, and production of computer-based simulations for educational purposes in a microcomputer environment.

I T 5640.3. Hypermedia/Multimedia Learning Environments. The primary purpose of this class is to learn to create complex learning environments that call upon a student's higher-order thinking and learning abilities focusing upon hypermedia and multimedia applications. The primary goals are for students to develop learning environment design guidelines, to apply hypermedia and multimedia. Prereq: IT 5320 or equivalent or permission of instructor.

I T 5840.1 to 4. Independent Study.

I T 5911-1 to 4. Field Experience in Library Media: Elementary. Provides practical experience in the management of a library media program. Includes 80 hours in an elementary school setting.


I T 5990-1 to 4. Special Topics in Instructional Technology.

I T 5997-3. Impact of Technology on Society. Defines STS as the study of the mutual impacts of the three areas of science, technology and society in our world and our lives with the study of examples of major interactions. Units/methods/materials for teaching STS in classes of science, social studies and technology are developed. Prereq: one year's teaching experience.

I T 5998-1 to 2. Professional Development Activities. Provides guidance for professional development through participation in appropriate state, regional and national conferences for meeting leaders and colleagues while upgrading professional knowledge and skills in the field. Prereq: enrollment in a graduate IT program of a professional in a field related to the conference.


I T 6120-2. Instructional Development Consultation. Interpersonal skills used when working with clients, subject matter experts, or teams during instructional development.


I T 6190-1 to 4. Advanced Seminar in Instructional Design and Development. Topical seminars to investigate issues, new models, or techniques in the field of instructional design and development.

I T 6510-3. Computer Graphic Systems. Introduction to electronic graphics technology for educators and instructional designers. Emphasis upon recent advances in computerized processing of data including video capture, image scanning and processing, graphics workstations, computer-aided design (CAD), computer-assisted animation, and desk-top publishing as they apply to solving problems in education, business, and industry.

I T 6530-3. Interactive Video. Study and application of systems combining the unique instructional advantages of video and of microcomputers emphasizing levels of interactivity, program design, hardware-software configurations, data collection, and types authoring systems and programs.

I T 6610-1 to 3. Advanced Courseware Design Seminar. Exploration of selected topics, issues, and techniques in designing interactive, microcomputer-based instruction and implementation using those techniques.

I T 6620-3. Artificial Intelligence Applications in Education.

I T 6710-3. Theoretical Bases for Instructional Technology. Seminar on the theoretical foundations of the field of instructional technology, including behavioral, cognitive, and systems theories. For doctoral students.

I T 6730-3. Comparative Models of Instructional Design. Advanced seminar for doctoral students in Instructional Technology which examines the theoretical foundations and the instructional implications of different objectivist and constructivist instructional design models, such as elaboration theory, component design theory, Gagne-Briggs, algorithmic, conversation theory, cognitive flexibility theory and others. Prereq: Admission to doctoral program or permission of instructor.

I T 6740-3. Learning Processes Applied to Instructional Technology. Advanced seminar for doctoral students in Instructional Technology which examines the theoretical foundations and the instructional implications of principles of learning for the practice of Instructional Technology. The topics will vary. Prereq: Admission to doctoral program or permission of instructor.

I T 6750-3. Current Trends and Issues in Instructional Technology. Advanced seminar for doctoral students in Instructional Technology which examines the current trends and issues in the practice of Instructional Technology. The topics will vary. Prereq: Admission to doctoral program or permission of instructor.

I T 6840-1 to 4. Independent Study.

I T 6930-1 to 6. Internship in Instructional Development and Training. Internship in instructional development and training placement in an agency or business where you will function in a consultative relationship with the agency to assess needs, design, develop, and evaluate an instructional system to solve some performance problem.


EDUCATIONAL PSYCHOLOGY

Division of Educational Psychology and Special Education

Division Coordinator: Laura D. Goodwin
Office: NC, Fourth Floor
Telephone: 556-3353
Facultv: Professors: William L. Goodwin, Kaoru Yamamoto
Assistant Professors: Nancy G. Christie, Alan Davis, Elizabeth Doll, Anastasia Kalamaros, Ellen Stevens

The M.A. program in educational psychology prepares students to facilitate the teaching/learning process. Thus, many students pursue the degree to enhance their skills as professional classroom teachers. The degree also provides skills necessary for a variety of roles where knowledge of learning, development, and research is essential. Other students seek the M.A. as preparation for certification in school psychology or for doctoral study in educational psychology. (Students
planning to continue graduate work beyond the M.A. level should become familiar, before enrolling, with certificate, specialist, or doctoral degree program prerequisites and requirements so that their master's program can be tailored to assure a smooth transition to such advanced work.)

Areas of Concentration

Five major areas of concentration are available—human learning, child growth and development, research and evaluation, preparation for school psychology, and individualized programs (such as adult learning). Regardless of the concentration area selected, all students must:
1. Take 9 hours of core courses required by the School of Education.
2. Demonstrate competence in educational psychology by successfully completing a minimum of 36 hours of relevant core course work (9 of which are the core).
3. Complete either a master's thesis (4 semester hours, M.A. Plan I) or an independent study project (3 to 4 semester hours, M.A. Plan II), the latter involving the collection of data bearing on a given problem and its analysis and interpretation in writing.
4. Perform satisfactorily on a four-hour written comprehensive examination (typically taken during the last term enrolled in regular courses).
5. Complete the degree on a timely basis, usually within three years.

School Psychology Certification

The program is designed to provide students with the skills and background necessary to provide school psychological services. Certification is available to students admitted to the Education Psychology/ School Psychology track. The program involves a minimum of 60 graduate credit hours. Upon completion, the student is recommended to the State Education Department for the School Psychology Certificate.

The program provides students with strong academic preparation in areas such as child development, human learning, multicultural issues, research methodology, and special education. The school psychological services model is one of consultation, individual and group intervention techniques, psychoeducational assessment, and the provision of school psychological services. An early childhood/infant specialization track are available as specialty training areas in school psychology. The program includes field work experience in the form of a practicum and internship. The total field work time requirement is 1,700 clock hours.

Courses

EPSY 5000-3. Psychological Foundation of Education. A survey of results of psychological inquiry with emphasis on applications to educational practices. Major topics are motivation, behavior, learning, development, measurement, and characteristics of teachers and students.

EPSY 5020-3. Advanced Psychological Foundations of Education. An examination of selected topics in the field of educational psychology; theoretical issues and current research assume the primary emphasis. The course is intended primarily for students who have had prior professional experiences in teaching and psychoeducational settings. Topics addressed include research on intelligence and child development, motivation, objective analyses of behavior, and learning.

EPSY 5040-3. Children's Thinking. A review of the psychology of thinking with emphasis on developmental changes in modes of thought. Topics include conceptual behavior, problem solving, creativity, humor, play, and others.

EPSY 5100-3. Advanced Child Growth and Development. A systematic study of the major theories of child growth and development. The course focuses on current research regarding children and the implications of research for education.

EPSY 5110-3. Human Learning. A review of the research methods and results of the study of human learning, including related topics such as information processing and motivation. Various theories of learning are examined in depth, and their applications to teaching and practices in schools (and in other educational settings) are considered.


EPSY 5140-3. Advanced Adolescent Growth and Development. A systematic study of the major theories of adolescent growth and development. The course focuses on current research regarding adolescents and the implications of research for education.

EPSY 5160-3. Behavior Disorders in Exceptional Children. An in-depth study of the psychological, social, and behavioral problems of exceptional learners. Topics to be discussed include identification, etiology, educational assessment and strategies, non-educational intervention, parent programming, and evaluation. Special attention is given to current research and its application for education.

EPSY 5170-3. Behavior Analysis and Intervention. This is an application level course that focuses on the development of social and affective skills for children and adolescents. Students will gain actual experiences in the analysis and implementation of a variety of behavioral, ecological, and psycho-educational interventions. Prereq: SPED 5120, EPSY 5160, or consent of instructor.

EPSY 5180-3. Psychology of Gifted, Talented, and Creative Children. An examination of the nature of gifted, talented, and creative children from an educational psychology perspective. Topics addressed include historical antecedents, identification, and characteristics of such children, research efforts and measurement issues, and relevant programs and teaching strategies.

EPSY 5200-3. Social Psychology of Learning. Analysis of social-psychological concepts, such as self-concept, attitude development, person perception, group processes, and related phenomena. Applications to education and other settings are considered.

EPSY 5220-3. Adult Learning and Education. Survey of theories and principles of adult learning and adult education with emphasis on practical applications and design of programs of instruction for adult learners.

EPSY 5240-3. Cognition and Instruction. Exploration of recent development in cognition and the implications for instructional practices. Includes theory and research in cognitive psychology and educational practices resulting from it.

EPSY 5800-1 to 4. Workshop: School Applications of Educational Psychology. Research, development, and other scholarly activities in educational psychology are studied and reviewed; applications are then made to school settings with student practice and utilization of techniques emphasized.

EPSY 5840-1 to 4. Independent Study.

EPSY 5920-1 to 4. Readings in Educational Psychology.

EPSY 6000-3. Proseminar in Educational Psychology. Examination of current and classic research in educational psychology consideration of personalities in the field, likely trends, and related topics. Prereq: consent of instructor.
PSY 6100-3. School Psychology Seminar. An introductory seminar in school psychology. The seminar covers theories and models of school psychological services, legal, legislative, and ethical concerns, as well as other current topics in the field.

PSY 6120-3. Family Dynamics. Review and analysis of issues related to families with handicapped or at-risk young children. Topics include coping skills, family involvement, psychopathology, and sources of support. Special attention is given to current research and its application to early intervention.

PSY 6150-4. Psychoeducational Assessment I. This course focuses on the assessment of child and adolescent psychoeducational skills. Primary emphasis is directed toward cognitive/intellectual evaluation in clinical and school settings. Topics include selection, administration, and interpretation of individual intelligence tests; an introduction to psychological report writing and historical, theoretical, and psychometric issues associated with intelligence. Test administration is required. Prerequisite: EPSY 5020, or PSY 5300.

PSY 6160-4. Psychoeducational Assessment II. In-depth study of the major techniques of psychological assessment and achievement assessment and their applicability to problems found in psychoeducational settings. Administration and interpretation of individual intelligence, special ability, personality, and achievement tests with attention to case study integration is required. Prerequisite: EPSY 5020, REM 5300, or PSY 6150.

PSY 6170-3. Assessment of Handicapped and At-Risk Infants. This course provides classroom and field-based experience in the assessment of young children birth to three years. Topics include selection, administration, and interpretation of a variety of tests. Norm-referenced and criterion-referenced tests and observational methods will be included.

PSY 6200-3. Human Development Over the Life Span. An inquiry into the experience and meaning of human development over the full span of life. Both analytical and reflective modes of exploration are utilized to approach the study of personality and the courses and themes of life.

PSY 6300-3. Legal and Professional Issues in School Psychology. This course will introduce students to the profession of school psychology and its research base including its history and professional issues, and legal issues that have impact on the practice of school psychology.

PSY 6400-3. Survey of School Psychology Interventions. This course provides students with advanced study of the research on, and techniques of, school psychological consultation, small group interventions, cognitive behavioral strategies and other interventions. Also includes instruction on the evaluation of intervention effectiveness. Prerequisite: 25 hours of masters level coursework and consent of instructor.

PSY 6500-3. Identifying and Planning for the Mental Health of School-Aged Children. This course provides students with advanced concentrated study of the etiology, diagnostic criteria, recommended intervention strategies, and diagnostic procedures appropriate for the identification of children's mental health needs. Prerequisite: 25 hours of masters level coursework and consent of instructor.

PSY 6910-2 to 4. Practicum in Educational Psychology. Field-based experiences in settings (schools, businesses, governmental agencies, special projects, etc.) that are linked closely to the student's professional objectives. Requires a minimum of 110, 165, or 220 clock hours under supervision (2, 3, or 4 credit hours respectively). Prerequisite: consent of instructor.

PSY 6911-1 to 6. School Psychology Practicum. The practicum allows students to integrate theory with school psychology practice. Consultation, psychoeducational assessment, and other school psychological services are stressed. Prerequisite: admission to school psychology program.

PSY 6930-1 to 6. School Psychology Internship. The internship stresses the professional practice of school psychology in a psychoeducational facility. Field experiences will encompass an array of school psychological services. Prerequisite: admission to school psychology program.


Assistant Professors: Alan Davis, Nancy Christie

This area provides a service to all education master's programs, offering courses in research methods, evaluation, statistics and measurement. There is also a REM emphasis track within the educational psychology master's degree program.

Courses

REM 5000-3. Orientation to Research and Measurement in Education. A survey-type course that provides an overview to the research process and to various types of research, and to major concepts and techniques in educational measurement. The emphases are on: 1) critiquing in educational research studies; and 2) critiquing tests and other measures used in educational research as well as for other assessment purposes. A limited coverage of statistics is included.

REM 5100-3. Basic Statistics. A first-level course that is oriented to the use and interpretation of descriptive and inferential statistics. Topics covered include frequency distribution, measures of central tendency, measures of variability; contingency tables, chi square; scattergrams, correlation and regression; t-test and analysis of variance.

REM 5200-3. Introduction to Research Methods. A survey-type course that examines the purposes of research, the methods and designs of quantitative and qualitative research, and the processes involved in research studies. The methods of research examined include experimental designs, quasi-experimental designs, descriptive surveys, case studies, ethnographies, and correlational designs. Designing a research study is part of the course activities.

REM 5300-3. Introduction to Measurement. A first-level course that examines the nature and purpose of measurement. Particular attention is paid to the concepts of reliability, validity, norms, interpretation of scores, response sets, fairness in testing, and norm-referenced vs. criterion-referenced tests. A variety of instruments that are used to measure human attributes and behaviors are studied.

REM 5350-3. Workshop in Instrument Development. Oriented toward providing an opportunity to learn the art and technology of developing different measurement tools in education. Students will develop an instrument of their own design. Topics vary.
SPECIAL EDUCATION:

TEACHER I, II AND III PROGRAMS

Division of Educational Psychology and Special Education

Division Coordinator: Laura D. Goodwin
Program Coordinator: Elizabeth B. Kozleski

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Faculty: Assistant Professors: Nancy French, Paula Hudson, Elizabeth B. Kozleski, Deanna J. Sands, Debra Schell-Frank

The University of Colorado at Denver offers both a master’s degree and endorsement-only special education programs in the areas of Teacher I: Students with Mild/Moderate Needs; Teacher II: Students with Severe Affective, Communicative or Cognitive Needs; and Teacher III: Students with Profound Needs. Teachers completing the Teacher I program are trained to work with students (K-12) who have mild to moderate special education needs across all handicapping conditions. Teacher II graduates specialize in the affective, communicative or cognitive area in order to work with students (K-12) with severe needs. Persons completing the Teacher III endorsement or master’s are trained to work with students who have profound needs from birth through 21 years of age.

The Special Education Program emphasizes training which prepares individuals to coordinate integration efforts with the needs of the student with special needs. Families, regular educators, administrators and student peers in both general and special education classrooms benefit from the integration experience. The CU-Denver Special Education program emphasizes experiential learning. In addition to traditional practicum, course requirements involve the application of information in school and community based programs. Students choosing this program must be prepared to try out new ideas in their own classrooms, or, alternatively, participate in a variety of field experiences. Some non-traditional practicum experiences are available on a limited basis. Also, students who already have been teaching in the special education field have the opportunity to request a reduction or waiver of their practicum experience. On the job practicums are available in coordination with the student’s administrative unit.

In Fall and Spring semesters, university courses are offered in the late afternoon and evening. Most courses are held once per week over 16 week semesters. Often, alternative course schedules are available such as meeting on nine Saturdays for five hours. During the summer semester, courses are offered during the day over four or eight week sessions.

Program Philosophy

The Division faculty at CU-Denver has a strong commitment to the principles of normalization, community integration, the dignity of risk, and the central role the persons with disabilities and their families must play in making choices about their lives and educational experiences. Students are challenged in each course to translate these ideals into reality in the schools. Individuals choosing the CU-Denver program will be expected to demonstrate knowledge and competencies in the following areas:

Constructivist Approaches to Learning
Transition Planning for Life-Long Learning
Community Referenced Curriculum
Nonaversive Behavior Management
Integration of Regular and Special Education Services
Family-School Partnerships
Ecological Approaches to Assessment
Consultation/Collaboration Skills
Systematic, Data-Based Instruction

Endorsement Programs

Students can receive an endorsement in the Teacher I program by completing 34 hours of graduate level course work. Teacher I endorsement students must have or be eligible to hold a Colorado teaching certificate prior to admittance into the program. Individuals seeking a Teacher II endorsement in any of the three areas must have a master’s degree in special education or a related field. The Teacher II endorsement program requires approximately 38 hours of graduate study. The Teacher III program includes approximately 34 hours of graduate study.

Applicants for any of the endorsement programs must meet the 24 hours of prerequisite undergraduate or graduate general education requirements.
Master's Programs

In addition to completing the endorsement course work, master's degree students complete a 9 semester hour educational psychology core, bringing their graduate program hours to between 41 and 47 hours depending on the endorsement being sought, in addition to the 24 hours of prerequisite course work in general education course work. Comprehensive examinations are required for all master's degree students.

Certification

The California Achievement Test (CAT) and an English Oral Proficiency exam must be completed within the first semester of entrance for students who do not currently hold a Colorado Teaching Certificate.

9 hours:
REM 5100. Basic Statistics
REM 5200. Introduction to Research Methods
EPSY 5100. Advanced Child Growth and Development
or
EPSY 5140. Advanced Adolescent Growth and Development

Teacher I Endorsement

Students must have completed the following 24 hours of prerequisites.

3 hours in each of the following:
Teaching Mathematics at the Elementary or Secondary Level
Foundations of Education
Human Growth and Development
Instructional Technology
Models of Teaching
Introduction to Special Education

6 hours in Teaching Reading and Writing

Students must then complete the following 27 hours of graduate course work:
LC 5040. Multicultural Education
SPED 5010. Teaching Strategies for Students with Special Needs
SPED 5110. Nature and Needs of Students with Mild/Moderate Disabilities
SPED 5120. Managing the Special Education Teaching Process
SPED 5140. Advanced Assessment in Special Education
SPED 5160. Medical and Physical Challenges in the Special Education Classroom

SPED 5180. Curriculum Planning for Students with Special Needs
SPED 5300. Consultation Skills for Special Education
SPED 5400. Seminar in Special Education

1–8 hours of Practicum Experience:
SPED 5910. Practicum: Students with Mild/Moderate Disabilities

Teacher II Endorsement: Severe Needs: Affective, Communicative, or Cognitive

Students must have a graduate degree in special education or a related field. It is highly preferred that students also hold or be eligible to hold a Colorado teaching certificate at the elementary or secondary level. Additionally, students must have completed the following 24 hours of prerequisites.

3 hours in each of the following:
Teaching Mathematics at the Elementary or Secondary Level
Foundations of Education
Human Growth and Development
Instructional Technology
Models of Teaching
Introduction to Special Education

6 hours in Teaching Reading and Writing

All students must then complete the following 24 hours of graduate course work:
LC 5040. Multicultural Education
SPED 5010. Teaching Strategies with Students with Special Needs
SPED 5120. Managing the Special Education Teaching Process
SPED 5140. Advanced Assessment in Special Education
SPED 5160. Medical and Physical Challenges in the Special Education Classroom
SPED 5180. Curriculum Planning for Students with Special Needs
SPED 5300. Consultation Skills for Special Education
SPED 5400. Seminar in Special Education

Students in the Severe Needs: Cognitive area also must complete 7–14 hours in the following courses.

6 hours:
SPED 5090. Nature and Needs of Students with Cognitive Disabilities
SPED 5380. Methods for Students with Severe Cognitive Needs

1–8 hours of practicum experience:
SPED 5912. Practicum: Severe Needs: Cognitive

In addition to the 24 basic hours, students in the Teacher II: Severe Needs: Communicative also must complete 7–14 hours in the following areas:

6 hours
SPED 5130: Speech/Language Characteristics of Students with Severe Communication Needs
SPED 6300: Teaching Methods for Students with Severe Communication Needs

1–8 hours of practicum experience:
SPED 5913: Practicum: Severe Needs: Communication

Teacher III: Profound Needs

Teacher III students must complete the 24 hour general education prerequisite requirement. It is also recommended that Teacher III students hold or be eligible to hold a Colorado teaching certificate at the elementary or secondary level. In addition to completing the endorsement course work listed below, master’s degree students complete a 9 semester hour educational psychology core. The 8 hour Teacher III practicum is completed in four settings: a neonatal setting, a preschool setting, an elementary and a secondary setting.

3 hours in each of the following:
LC 5040. Multicultural Education
ECE 5060. Working with Parents and Families
ECE 6100. Medical and Physiological Aspects of Disabilities
SPED 5140. Advanced Assessment in Special Education
SPED 5160. Medical and Physical Challenges in the Special Education Classroom
SPED 5180 - Curriculum Planning for Students with Special Needs

SPED 5300 - Consultation Skills for Special Education

SPED 5400 - Seminar in Special Education

SPED 6100 - Communication Development for Students with Severe/Profound Needs

SPED 6200 - Teaching Strategies for Students with Severe/Profound Needs

1–8 hours

SPED 5914 - Practicum: Students with Severe/Profound Needs

Courses

SPED 5000-3. Education of Exceptional Children. Introduction to all major categories of exceptionality. Emphasis is on historical perspectives, legal aspects, definitions of handicapping conditions, major theoretical viewpoints and service delivery models.

SPED 5010-3. Teaching Strategies for Students with Special Needs. This methods course is offered as a foundation for both special and regular educators in mainstreaming students with special needs. The course provides general strategies for planning and organizing classroom instruction, evaluating instructional materials, managing individualized instruction, and adapting or modifying existing curriculum. Emphasis is placed on needs based model of service delivery.

SPED 5020-3. Curriculum Planning for Students with Special Needs. This course introduces students to the cognitive, psychosocial, and psychomotor needs of students with a variety of handicapping conditions. A focus is placed on a needs based model of assessment, program planning, and evaluation. Instructional strategies are evaluated in terms of their impact on varying disabilities. Prereq: SPED 5010, 5120, and educational psychology core, or consent of instructor.

SPED 5120-3. Managing the Special Education Teaching Process. This class provides a practical format for developing the necessary skills to manage the environmental, behavioral, instructional, and classroom management issues that confront a special educator. Prereq: SPED 5010 or consent of instructor.

SPED 5130-3. Speech Language Characteristics of Students with Severe Communication Needs. This course provides a basis for identification and description of speech and language dysfunctions of students with severe communication needs. Careful attention will be given to the multidisciplinary nature of speech/language and its effects on cognitive/affective/motor functioning. Prereq: SPED 5000, 5010, or permission of the instructor.

SPED 5140-3. Advanced Assessment in Special Education. This course provides the practitioner with an understanding of the special education assessment process as specified by federal and state guidelines. Students analyze normed and informal tests as well as observe and participate in performing assessments. Prereq: SPED 5010, 5120, and one of the nature and needs courses, or consent of instructor.

SPED 5160-3. Medical and Physical Challenges of the Special Education Classroom. This study of the medical aspects and physical needs of exceptional students provides basic information on the types of spinal cord, neurological, and biochemical dysfunctions and their impact on students' motoric, sensorimotor, cognitive and affective systems. The course will provide an overview of chronic medical management in the classroom setting. Topics will include hygiene, medication, catheterization, postural drainage, proftheses, adaptations and devices, feeding/eating, handling, lifting, and positioning.

SPED 5180-3. Curriculum Planning for Students with Special Needs. This course is designed to give teachers a framework for providing functional learning experiences in the domains of education, community access, employment, independent living, and social/recreational skills for students in special education. Emphasis is placed on creating, implementing, and evaluating educational placements for subsequent environments. Prereq: SPED 5010, 5120, or consent of instructor.


SPED 5300-3. Consultation Skills for Special Education. Consultation skills are vital for special educators working to integrate successfully special education students. This course focuses on the development of competencies in consultation and collaboration. Prereq: SPED 5010, 5120, and 5180 or consent of instructor.

SPED 5320-3. Uses of Technology in Special Education. Specifically designed for the special educator, this course addresses the uses of computers with students in special education. Issues in augmentative communication, adaptation of software authoring systems, and the adaptive firmware level are covered.

SPED 5380-3. Methods for Students with Severe Cognitive Needs. This is an application level class designed to give teachers the instructional skills they need to provide quality services to students with cognitive disabilities. Prereq: SPED 5090 and completion of the special education core, or consent of instructor.

SPED 5400-3. Seminar in Special Education. This course is designed to allow an opportunity for special educators to compare and contrast the service delivery, funding mechanisms, professional ethics, and underlying assumptions of special and regular education. Trends in the field of special education are examined through review of current research. Prereq: SPED 5010, 5020, 5110, 5140, 5180, and 5300, or consent of instructor.

SPED 5800-1 to 4. Workshop: Topics in Special Education.

SPED 5840-1 to 4. Independent Study. SPED 5910-1 to 6. Practicum: Students with Mild to Moderate Needs. Students will complete a 12 week (360 hour) practicum under the direct supervision of a special education teacher with certification as a Teacher 1 or for educationally handicapped students. The practicum will be split between elementary and secondary levels. Students will meet with their university supervisor at least 6 times during the course of the practicum experience. Prereq: completion of special education core or consent of instructor.
SPED 5911-1 to 6. Practicum: Students with Affective Needs. Students will complete a 12 week (360 hour) practicum under the direct supervision of a special education teacher with certification as a Teacher 2: Affective needs or for educationally handicapped students. The practicum will be split between elementary and secondary levels. Students will meet with their university supervisor at least 6 times during the course of the practicum experience. Prereq: completion of special education core or consent of instructor.

SPED 5912-1 to 6. Practicum: Students with Severe Cognitive Needs. Students will complete a 12 week (360 hour) practicum under the direct supervision of a special education teacher with certification as a Teacher 2: Cognitive needs or for educationally mentally retarded students. The practicum will be split between elementary and secondary levels. Students will meet with their university supervisor at least 6 times during the course of the practicum experience. Prereq: completion of special education core or consent of instructor.

SPED 5913-1 to 6. Practicum: Students with Communication Needs.

SPED 5914-1 to 6. Practicum: Students with Severe to Profound Needs. Students will complete a 12 week (360 hour) practicum under the direct supervision of a special education teacher who has primary responsibility for students with severe/profound needs. The practicum will be split among infant, preschool, elementary and secondary age groups. Students will meet with their university supervisor at least six times during the course of the semester. Prereq: completion of Teacher 3 course work or permission of instructor.

SPED 6100-3. Communication Development for Students with Severe to Profound Needs. This course is an in-depth analysis of the development of communicative competence in students with severe/profound needs. Prereq: completion of special education core or permission of instructor.

SPED 6200-3. Teaching Strategies for Students with Severe to Profound Needs. Students will develop skills in working with school-age children with severe/profound needs. Prereq: SPED 6100 or permission of the instructor.

SPED 6300-3. Teaching Methods for Students with Severe Communication Needs. This course will offer training in defining and elaborating on the needs of students identified as having severe communication needs. Students will learn to expand and apply various theories of instruction. They will administer and interpret procedures for assessing speech and language skills. They will be able to plan for maintenance and generalization within the student’s environment. Prereq: SPED 5000, 5120, 5130, or permission of the instructor.

College of Engineering and Applied Science

Acting Dean: Oren G. Strom
Acting Associate Dean: John A. Trapp
Assistant to the Dean: Max Morstad
Staff Assistant: Donna Hedden
Office: NC 3024
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Curt Zook, General Manager, US West Communications

INFORMATION ABOUT THE COLLEGE

The College of Engineering and Applied Science at the University of Colorado at Denver, continuing a seventy-five year tradition, is meeting the needs of the Denver metropolitan area by providing nationally accredited engineering education to the urban community at times (evening and daytime) convenient to both students and employers.

CU-Denver is the only institution in the Denver metropolitan area where the working individual can earn both undergraduate and graduate degrees in engineering entirely through evening studies. The College offers degree programs in civil engineering, mechanical engineering, applied mathematics, electrical engineering, and computer science and engineering. These programs are attractive to students who recognize the tremendous value of simultaneous professional studies and related employment.

Practicing engineers, through evening studies at CU-Denver, can improve and update their professional capabilities as well as earn graduate degrees in the above programs.

Engineers also can obtain graduate education in management, computer science, behavioral science, or other areas, together with new engineering skills in their field through the special interdisciplinary Master of Engineering degree program. In addition, the College participates in an interdisciplinary Master of Science in environmental science.

The expertise of the faculty of the College includes soil dynamics, dynamic behavior of structures, transportation, language-based computer architecture, highly parallel computer systems, communications and signal processing, computer graphics, computer-aided design, alternative energy sources, robotics, and bio-mechanics, in addition to the traditional areas in civil, electrical, computer, and mechanical engineering.

The College is pleased to host the executive offices of the Colorado Minority Engineering Association (CMEA). The College is committed to supporting statewide CMEA programs designed to help prepare minorities and women in local junior and senior high schools for entry into university engineering programs.

A listing of the fields in which engineers work would have many hundreds of entries. The following list gives only a brief summary of the fields available at CU-Denver.

Applied mathematics meets the need of modern research which is dependent upon advanced mathematical concepts.

Almost all concerns that are engaged in industrial and scientific research today need applied mathematicians, as do organizations involved in computational work, statistical analysis, or stochastics.

Civil engineering offers an interesting and challenging career in the design and construction of buildings, bridges, dams, aqueducts, and other structures; in transportation systems including highways, canals, pipelines, airports, rapid transit lines, railroads, and harbor facilities; in the transmission of water and the regulation of rivers; in the development of water resources for urban use, industry, and land reclamation; in the control of water quality through water purification and proper waste treatment; in the construction and contracting industry; and in the problems concerned with mankind's physical environment and the growth of cities.

Computer science and engineering involves work in the theory, design, and application of computers and computational methods. It includes design and construction of efficient software systems as well as hardware design and manufacture. The application of microprocessors to many areas of engineering has opened new opportunities in computer engineering and computer science.

Electrical engineering offers professional possibilities that include teaching and research in a university; research in development of new electrical or electronic devices, instruments, or products; design of equipment or systems; production and quality control of electrical products for private industry or government; and sales or management for a private firm or branch of government. There are numerous specialties within electrical engineering. Among them are the design and application of computer systems; electron magnetic fields; communication theory and signal processing; electrical integrated circuits, and electron devices; energy and power control systems; and others.

Mechanical engineering offers a wide range of interesting and challenging career opportunities in research, design, development, manufacturing, testing, and marketing for either private industry or government. Mechanical engineers may
work on a wide range of products such as engines, transmissions, compressors, pumps, computer disk drives, CAD/CAE software, oil field drilling rigs, missiles, space satellites, earth moving equipment, container manufacturing machines, medical equipment, and many other products encountered in daily life.

College of Engineering and Applied Science

Educational Goals

The College of Engineering and Applied Science has established the following goals and objectives for undergraduate education:

1. Successful completion of the fundamental core courses, primarily lower division, in mathematics and the physical sciences.
2. Successful completion of the required upper division courses in engineering science, analysis, and design.
3. Successful completion of real-world engineering design projects that require integration of engineering, economic, and social skills.
4. Successful completion of a series of social/humanistic courses that introduce the student to societal problems, humanistic concerns, and historical perspective.
5. Evidence, through close student/faculty contact, of development of professionalism, ethics, and concern for the multifaceted human element of engineering.
6. Evidence, from successful completion of a full engineering curriculum, of the ability to maintain professional competency through lifelong learning.
7. Evidence, through successful completion of a series of communications-oriented courses and project presentations, of an ability to communicate effectively with professionals and lay persons alike.

Undergraduate Degree Programs

The College of Engineering at the University of Colorado at Denver offers the following engineering Bachelor of Science degree programs:

- Applied Mathematics
- Civil Engineering
- Computer Science and Engineering
- Electrical Engineering
- Mechanical Engineering

The civil, electrical, and mechanical engineering programs are currently accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET).

Availability of Degree Programs

The University of Colorado at Denver will accept for matriculation only those prospective engineering students who designate a degree program awarded by the CU-Denver College of Engineering and Applied Science. For 1992-93, five engineering degrees are awarded by CU-Denver. Students desiring degree programs other than those named above must apply to the campus awarding the degree. In some cases, the University campus accepting the student may grant permission to take courses on another CU campus, subject to enrollment limitations. In such cases, the engineering department of the admitting campus will counsel the student in the preparation of course schedules.

At CU-Denver it is also possible for a student to obtain a bachelor’s degree in engineering and a bachelor’s degree in business in five years plus one or two summer terms. Any of the engineering degree programs can be modified for an excellent premedical program. Students interested in combinations of degree programs, or any other variation of a typical degree program, should see a counselor promptly upon acceptance into the College. Such programs usually require students to begin their degree plans very early.

A second bachelor’s degree may be of interest to some students. If liberal arts students elect certain courses in science, mathematics, and engineering as undergraduates, they may earn an engineering degree in four semesters after graduation from the College of Liberal Arts and Sciences.

Graduate Degree Programs

CU-Denver offers graduate degree programs in civil engineering, electrical engineering, and mechanical engineering. Information on courses and requirements is found under the discipline heading in this section of the catalog.

Non-Degree Students

Non-degree students may apply 12 semester hours of course work (18 if taken in one semester) toward a bachelor’s degree in engineering from CU-Denver.

Summer Courses

Summer term courses are offered for regular students and those who must clear deficiencies. Courses also are offered for high school graduates who wish to enter as freshmen and for those who need to remove subject deficiencies.

For some students there are advantages in starting their college careers during the summer term. Most required freshman and sophomore courses and many elective courses are offered at CU-Denver during the summer. The summer term gives students a head start and enables them to take a lighter load during the fall semester or take additional courses to enrich their program.

Students should write to the CU-Denver Office of Admissions and Records for the Schedule of Summer Classes.

Computing

The College of Engineering and Applied Science encourages all students to develop their skills in using the computer as a tool, not only for solving technical problems but for use in all other facets of their career. Students are encouraged to explore computer courses other than the fundamental programming course required in their curriculum. Examples are CSC 1950, Macintosh Mind Tools, and courses in other languages, such as C.

Cooperative Education

Students who need or prefer to work while completing their degrees should explore cooperative education offered through full-time work alternating with semesters of full-time school, or work part-time year around. Many co-op positions lead to permanent career appointments upon graduation.

This program is available to students who have completed their freshman year and have maintained a grade-point average of at least 2.5. See the Center for Internships and Cooperative Education section in this catalog for further information on this expanding program.

Scholarships, Fellowships, and Loan Funds

The College receives an annual allocation of state funds for Dean’s Scholarships; these funds are awarded to students who apply and meet scholarship and community service criteria. Limited additional funds for scholarships and loans are obtained through contributions from
alumni and friends to the University Foundation. Applications for all these funds are accepted beginning with the fall semester each year; awards are usually made in December. For more information, contact the Office of the Dean, NC 3024.

**Women & Minority Engineering Program (WMEP)**

The College particularly encourages minorities and women to explore an engineering education and career. Although these population groups are currently under-represented in engineering fields, the demands for them are very high and the opportunities very attractive. In order to help assure success of minorities and women in engineering studies, a Women & Minority Engineering Program (WMEP) has been established. The sole purpose of the WMEP is to provide the support structure for women and minorities who often may feel estranged in engineering classes. A full-time director and staff are dedicated to assisting the minority or female student with application, matriculation, advising, tutoring, and similar functions. The WMEP also works closely with the minority student organizations such as the National Society of Black Engineers, Society of Hispanic Professional Engineers and Scientists, and Society of Women Engineers (see below). A study center is operated by the WMEP office and serves as a meeting place for students. Minority and women students are encouraged to seek out the WMEP in NC 3017, 556-4768, and become acquainted with the staff in their first semester, even if they have no particular request to make at the time.

**Student Organizations**

A general student organization, known as the Associated Engineering Students (AES), of which all students in the College are members, has supervision of matters of interest to all engineering students. Student chapters of the following professional societies are well established at CU-Denver:

- American Society of Civil Engineers (ASCE)
- American Society of Mechanical Engineers (ASME)
- Association for Computing Machinery (ACM)
- Institute of Electrical and Electronic Engineers (IEEE)
- National Society of Black Engineers (NSBE)
- Society of Hispanic Professional Engineers and Scientists (SHPES)
- Society of Women Engineers (SWE)

These societies meet regularly to present papers, speakers, films, and other programs of technical interest.

The following honorary engineering societies have active student chapters in the College of Engineering and Applied Science:

- *Chi Epsilon*, civil engineering honor society
- *Eta Kappa Nu*, electrical engineering honor society
- *Pi Tau Sigma*, mechanical engineering honor society
- *Tau Beta Pi*, engineering honor society

**Center for Urban Transportation Studies**

The Center for Urban Transportation Studies (CUTS), operating under the Department of Civil Engineering, was established (1) to assume a leading role in the Rocky Mountain region in developing research, research facilities, and interdisciplinary graduate programs in urban transportation; and (2) to provide a central resource for information concerning urban transportation problems in the Rocky Mountain region, making the expertise within the University available to outside organizations.

Through CUTS, the departments offer interdisciplinary graduate programs and research opportunities designed to develop professionals who will be capable of dealing with the complex problems of urban transportation in a competent and meaningful manner. Degree programs are available through the College of Engineering and Applied Science, College of Liberal Arts and Sciences, Graduate School of Public Affairs, Graduate School of Business Administration, and School of Architecture and Planning. For more information call (303) 556-2871, or write to CUTS, University of Colorado at Denver, Campus Box 113, P.O. Box 173364, Denver, CO 80217-3364.

**University of Colorado at Boulder**

Six engineering departments are located on the campus of the University of Colorado at Boulder. Complete B.S., M.S., and Ph.D. degree programs are offered by the Department of Aerospace Engineering Sciences, the Department of Chemical Engineering, the Department of Civil, Environmental and Architectural Engineering, the Department of Computer Science, the Department of Electrical and Computer Engineering, and the Department of Mechanical Engineering. Undergraduate and graduate degrees also are offered in applied mathematics and engineering physics. The programs at the Boulder campus are primarily oriented to the full-time student who can attend day classes.

**University of Colorado at Colorado Springs**

Three engineering departments are located on the campus of the University of Colorado at Colorado Springs (UCCS). Complete B.S. degree programs are offered in electrical engineering and computer science, and the M.S. degree is awarded in electrical engineering. Students may complete work for the Ph.D. degree through the University-wide Graduate School. The UCCS Department of Mathematics also is a department of the College of Engineering and offers the B.S. and M.S. degrees in applied mathematics.

**REQUIREMENTS FOR ADMISSION**

The student must generally meet the admission requirements described in the General Information section of this catalog and of the College of Engineering in which the degree program selected by the student is offered. Persons with extensive maturity and experience who do not meet the prescribed requirements for admission may be admitted upon approval of the dean.

Beginning students in engineering should be prepared to start analytic geometry-calculus. No credit toward any degree in engineering will be given for algebra, trigonometry, or pre-calculus mathematics (MATH 1110, 1120, and 1130). (These courses are offered to allow a student to make up deficiencies.) Students who question the adequacy of their pre-college background in mathematics should contact the Department of Mathematics. Placement tests covering pre-calculus mathematics are required of new freshmen to select the appropriate beginning mathematics course.

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, including some solid geometry. It usually takes eight semesters to cover this material adequately in high school.

**Freshmen**

**High School Subjects**

<table>
<thead>
<tr>
<th>Required for Admission</th>
<th>Required Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English (literature, composition, grammar)</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics distributed as follows:</td>
<td></td>
</tr>
<tr>
<td>Algebra</td>
<td>2</td>
</tr>
<tr>
<td>Geometry</td>
<td>1</td>
</tr>
<tr>
<td>Trigonometry and Analytical Geometry</td>
<td>1</td>
</tr>
<tr>
<td>Natural sciences</td>
<td>3</td>
</tr>
<tr>
<td>(to include 1 unit physics and 1 unit chemistry; also to include 2 units of laboratory science)</td>
<td></td>
</tr>
<tr>
<td>Foreign language</td>
<td>2</td>
</tr>
<tr>
<td>Social science</td>
<td>2</td>
</tr>
<tr>
<td>(to include 1 unit of U.S. or world history)</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
</tr>
</tbody>
</table>

**Former Students**

Former students must meet the readmission requirements outlined in the General Information section of this catalog. Students who interrupt their degree program for an extended period will be required to follow the degree program in effect at the time of their re-admission to the College. Repetition of course work may be necessary because of the interruption; re-admit applicants will be evaluated on an individual basis. Repeated courses must be taken for no-credit (NC). See the Repetition of Courses policy under Academic Policies in this section of the catalog.

**Transfer Agreements**

The College of Engineering has formal transfer agreements with the following Denver metro-area community colleges:

- Arapahoe Community College (Littleton) - 794-1550
- Community College of Aurora - 360-4700
- Community College of Denver - 556-2600
- Front Range Community College (Westminster) - 466-8811
- Red Rocks Community College (Lakewood) - 988-6160

These transfer agreements provide an opportunity for potential engineering students to complete courses applicable to an engineering program offered at CU-Denver. Students interested in participating in a transfer agreement should contact the Engineering Dean's Office at 556-2870 and the respective community college counseling office at the phone number indicated above.

**Transfer Students**

Applications to transfer from other accredited collegiate institutions will be considered for admission on an individual basis if they meet the requirements outlined in the General Information section of this catalog and have successfully completed a year each of calculus and physics (calculus-based).

Applications to transfer from another college on the Denver Campus to the College of Engineering and Applied Science, will be considered on an individual basis by the Office of the Dean if both of the following conditions are fulfilled:

1. Enrollment limitations permit.
2. The student has a minimum of 30 hours toward an engineering curriculum at that campus, not counting transfer hours.
3. If an engineering student, the student is in good academic standing with a 2.0 cumulative grade-point average for all courses attempted, for all courses taken from the student's major department, and for all courses that count toward graduation requirements. If not an engineering student, the student's academic record must fulfill the transfer admission requirements of the College of Engineering and Applied Science.

Some course sequences should be completed before transferring to another campus; therefore, it is strongly recommended that students who contemplate transferring see their department advisors on both campuses prior to initiating the transfer request.

**Transfer Credit**

Refer to the General Information section of this catalog for descriptions of University-wide policies on transfer credit.

After a prospective transfer student has made application and submitted official transcripts to the University of Colorado Office of Admissions Processing, the Office issues an Applicant Transfer Credit Evaluation listing those courses that are acceptable by University standards for transfer. A copy of this evaluation is sent to the student and to the Office of the Dean by the Office of Admissions Processing and is made a part of the permanent record. An engineering faculty departmental transfer advisor will use this form to indicate which courses and credit hours listed are acceptable toward the graduation requirements for the student's degree program. The decisions will be recorded on both the Applicant Transfer Credit Evaluation form and the department's Study Program for B.S. form and signed and dated. Both forms are reviewed by the Office of the Dean and signed and dated. Any modification to the initial evaluation must be by petition, have the recommendation of the transfer advisor and department chair, and have approval of the Office of the Dean. All documents will become a part of the student's master file in the Office of the Dean. All transfer credit must be validated by satisfactory achievement in subsequent courses.
Nontransferable Credits

The following guidelines have been established for transfer credits from engineering technology programs.

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.

Engineering technology courses (courses with technology designations) will not be considered for transfer into an engineering degree program.

Students may seek credit for course work by examination (see Credit by Examination in the General Information section of this catalog).

UNDERGRADUATE CORE CURRICULUM—IN ENGINEERING

The faculty of the College of Business and Administration, the College of Engineering and Applied Science, and the College of Liberal Arts and Sciences have established a new core curriculum for undergraduate students. See the General Information section of this catalog for an overview of the common core concept.

<table>
<thead>
<tr>
<th>Sem.</th>
<th>Hrs.</th>
<th>SOCIAL SCIENCES: (Economics, Political Science, Sociology)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 hrs.</td>
<td></td>
<td>Two (2) courses in the same discipline from:</td>
</tr>
<tr>
<td>ECON</td>
<td>2012-3</td>
<td>Principles of Economics—Macro, and</td>
</tr>
<tr>
<td>ECON</td>
<td>2022-3</td>
<td>Principles of Economics—Micro; or</td>
</tr>
<tr>
<td>PSC</td>
<td>1001-3</td>
<td>Intro to Political Science, and</td>
</tr>
<tr>
<td>PSC</td>
<td>1101-3</td>
<td>American Political Systems; or</td>
</tr>
<tr>
<td>SOC</td>
<td>1001-3</td>
<td>Intro to Sociology, and</td>
</tr>
<tr>
<td>SOC</td>
<td>2462-3</td>
<td>Intro to Social Psychology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Behavoral SCIENCES: (Anthropology, Communications, Psychology)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One (1) course from:</td>
</tr>
<tr>
<td>ANTH 1031-3</td>
</tr>
<tr>
<td>ANTH 2102-3</td>
</tr>
<tr>
<td>CMMU 1011-3</td>
</tr>
<tr>
<td>CMMU 1021-3</td>
</tr>
<tr>
<td>PSY 1002-3</td>
</tr>
<tr>
<td>PSY 1013-3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Humanities: (English Literature, History, Philosophy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two (2) courses in the same discipline from:</td>
</tr>
<tr>
<td>HIST 1030-3</td>
</tr>
<tr>
<td>HIST 1040-3</td>
</tr>
<tr>
<td>ENGL 2550-3</td>
</tr>
<tr>
<td>ENGL 2560-3</td>
</tr>
<tr>
<td>PHIL 1012-3</td>
</tr>
<tr>
<td>PHIL 1020-3</td>
</tr>
</tbody>
</table>

NOTE: All other components of the CU-Denver common core requirements are satisfied by the required courses in each of the engineering degree programs.
Undergraduate Core Curriculum in Engineering

Students graduating from the College of Engineering in May 1994 or later are required to satisfy the Humanities and Social Sciences (H&SS) and Communications (Writing/Speech) portions of their engineering program by taking courses from the CU-Denver common core listed in the preceding table. Students who graduate before May 1994 are strongly encouraged to follow this plan as closely as possible.

All students graduating after May 1991 and before May 1994 must submit a course plan showing how they will satisfy their department's H&SS and Communications requirements. This plan must be approved by the major department and by the Office of the Dean in the College of Engineering.

The preceding table outlines the common core as it relates to all undergraduate engineering programs. Exceptions are possible; however, such requests must be by written petition in advance.

ACADEMIC POLICIES

Refer to the General Information section of this catalog for descriptions of University-wide policies.

The following policies apply specifically to the College of Engineering and Applied Science.

Advanced Placement

Advanced placement credit may be granted by special examination of the department involved or by College Entrance Examination Board (CEEB) tests. If the applicant has scored 4 or 5 on the CEEB Advanced Placement Examination, credit toward graduation may be awarded. Students who have scored 3 may be considered for advanced placement by the department concerned. All advanced placement and transfer credit must be validated by satisfactory achievement in subsequent courses, in accordance with standard transfer policies of the College.

Attendance Regulations

Successful work in the College of Engineering and Applied Science is dependent upon regular attendance in all classes. Students who are unavoidably absent should make arrangements with instructors to make up the work missed. Students who, for illness or other good reason, miss a final examination must notify the instructor or the Office of the Dean no later than the end of the day on which the examination is given. Failure to do so will result in a failing grade in the course.

Changing Departments

Students who wish to change to another department within the College of Engineering and Applied Science must apply for transfer by submitting a Change of Major for Undergraduate Degree Students form which must have the approval of both departments concerned. (See also discussion of interdepartmental transfer requirements under Transfer Students.)

College-Level Examination (CLEP) Credit

Prospective students may earn college-level credit through the College-Level Examination Program (CLEP) subject examinations, provided that they score at the 67th percentile or above. The department's transfer advisor will advise students of the credits accepted for such courses toward a degree program. A list of subjects in which CLEP examination credit will be accepted may be obtained from the College of Engineering and Applied Science office. (See also College Level Examination Program in the General Information section of this catalog.) CLEP general examinations are not acceptable.

Counseling

Freshman students are counseled by the Office of the Dean and by representatives from each academic department. These representatives are readily available to assist students with academic, vocational, or personal concerns. Students are assigned specific departmental advisors for academic planning and should contact the departmental office for advising appointments.

Course Load Policy

Full-time Students. Undergraduate students employed less than 10 hours per week should register for the regular work as outlined in the departmental curricula. Additional courses may be allowed when there is satisfactory evidence that the student has the capability to handle the added load. Permission to take more than 21 hours may be granted only after written petition and approval of the departmental chairman and the dean.

Employed Students. Suggested maximum course loads for undergraduate students employed 10 or more hours per week are as follows:

- Employed 40 or more hours per week—two courses (maximum of 9 semester hours)
- Employed 30 hours per week—three courses (maximum of 12 semester hours)
- Employed 20 hours per week—four courses (maximum of 15 semester hours)
- Employed 10 hours per week—five courses (maximum of 18 semester hours)

Freshman Year

Fundamentals taught in the freshman year are of critical importance in the more advanced classes. Special attention should be given to register the proper courses in the proper sequence. (Course requirements for freshmen are detailed within the curriculum given under each department.) All freshmen are urged to consult their instructors whenever they need help in their assignments.

Repetition of Courses

Students may not register for credit in a course in which they already have received a grade of C– or higher. Students must repeat a course in which a grade of D+ or lower was earned if that course is a prerequisite to another required course. An F grade in a required course necessitates a subsequent satisfactory completion of the course. If students do not successfully complete (C– or higher) an engineering class on the second attempt, they must obtain written approval from their major department to enroll for the course for the third time.

No Credit

An engineering student must petition for approval before enrolling no credit (NC) for any course. Required courses may not be taken for no credit. Once a course has been taken NC, the course cannot be repeated for credit.

Work Experience

The College of Engineering and Applied Science does not award academic credit for prior work experience.
College Policy on Academic Progress

An engineering student must maintain a cumulative grade-point average of 2.0 or better in all hours attempted at the University of Colorado, in those courses required toward graduation requirements, and in all courses taken from the student’s major department, in order to remain in good standing in the College of Engineering and Applied Science. Grades earned at another institution are not used in calculating the grade-point average at the University of Colorado. However, grades earned in another school or college within the University of Colorado will be used in determining the student’s scholastic standing and progress or lack of progress toward the Bachelor of Science degree in the College of Engineering and Applied Science.

Students whose cumulative CU average falls below 2.0 will be placed on probation for the next semester in which they are enrolled in the College and will be so notified. If, after the probationary semester the student’s cumulative average is still below 2.0, the student will be suspended from the College.

The following is additional information and interpretation of the policy:

1. Students are suspended indefinitely and may not enroll at any University of Colorado campus during any regular academic year, September through May, but may enroll in summer terms and/or may take correspondence courses for credit through the Division of Continuing Education in Boulder.

2. Students who have been suspended may apply for readmission if they bring their University of Colorado cumulative average up to a 2.0 through summer term and/or correspondence work applying to engineering degree requirements.

3. Students, upon satisfactorily completing at another college or university a minimum of 12 semester hours of acceptable work appropriate to an engineering curriculum subsequent to suspension, may apply for readmission as a transfer student during the second semester following their suspension.

4. Applicants for readmission to the University of Colorado cannot be assured readmission.

5. During a probation semester the student must complete a normal load, i.e., 12 hours or more (see employed student suggested course load) of courses counting toward graduation requirements. Physical education courses do not count; if the student has previously completed 6 hours of ROTC courses, ROTC courses do not count; if the required hours of humanities and social science subjects have been completed, such subjects do not count.

6. Students who have been on probation or suspension for 2 or more terms or have been on probation or suspension at any time in the past will automatically be suspended if their cumulative average again falls below a 2.0. (No additional probationary semester is permitted.)

Details of the probationary and suspension status and of the conditions for return to good academic standing will be stipulated in the letters of probation and suspension. Information regarding these matters may be obtained in the Office of the Dean, NC 3024.

In addition to College policies, departments within the College may set standards of progress within their department and students should make a point of knowing them.

Academic Ethics ( Dishonesty, Cheating)

Students are expected to conduct themselves in accordance with the highest standards of honesty and integrity. Cheating, plagiarism, illegitimate possession and disposition of examinations, alteration, forgery, or falsification of official records, and similar acts or attempts to engage in such acts are grounds for suspension or expulsion from the University.

In particular, students are advised that plagiarism consists of any act involving the offering of the work of someone else as the student’s own. It is recommended that students consult with their instructors as to the proper preparation of reports, papers, etc., in order to avoid this and similar offenses.

At CU-Denver there is a Student Academic Honor Code. The code is published in a brochure available from the Student Enrollment and Services office. Information regarding all student grievance procedures may be obtained in that office, NC 2204.

In addition, the College has a Committee on Discipline which hears cases of alleged violations of academic ethics and recommends disciplinary action when and if appropriate. Students who suspect or observe violations of academic ethics should report them to their instructor, the department chairman, or the Office of the Dean.

Grading System, Incompletes, Pass/Fail and Drop/Add Procedures

See the General Information section of this catalog for the University of Colorado uniform grading system and for additional pass/fail information and drop/add procedures. Also see the current Schedule of Classes.

Final grades as reported by instructors are to be considered permanent and final. Grade changes will be considered only in cases of documented clerical error and must be approved by the dean.

INCOMPLETES

An incomplete may be given by the instructor for circumstances beyond the student’s control, such as a documented medical or personal emergency. When it is given, the student, the Office of the Dean, and the departmental office are informed, in writing, by the instructor who states what the student is to do in order to remove the incomplete and the date the tasks are to be completed. The instructor may assign only the L/F grade. The student is expected to complete the course requirements, e.g., the final examination or term paper, 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.

PASS/FAIL

The primary purpose for offering courses on a pass/fail grade basis is to encourage students, especially juniors and seniors, to broaden their educational experience by electing challenging upper division humanities and social sciences elective courses without serious risk to their academic records. In general, pass/fail should be limited to 3000- or 4000-level humanities and social sciences courses. Students must process the pass/fail form during the first two weeks of the semester. Engineering students cannot take required courses pass/fail.

Below are specific pass/fail regulations for the College of Engineering and Applied Science:

1. A maximum of 16 pass/fail hours may be included in a student’s total program. A maximum of 6 hours may be taken in one semester, but it is recommended that not more than one course at a time be taken pass/fail.

2. Courses that a student may elect to take pass/fail shall be designated and approved in advance by the student’s
major department. If courses not so designated are taken, the earned grade will be recorded in place of the P. An engineering student who has not designated a major field will not be allowed the pass/fail option without approval through the Office of the Dean.

3. A transfer student may count toward graduation one credit hour of pass/fail for each 9 credit hours completed in the College; however, the maximum number of pass/fail hours counting toward graduation shall not exceed 16, including courses taken in the Honors Program under that program’s pass/fail grading system.

DROP/ADD

See the General Information section of this catalog for drop/add procedures and deadlines. Only under very extenuating circumstances will petitions for dropping courses be considered after the tenth week of the semester.

Sequence of Courses

Full-time students must generally complete the courses in the department in which they are registered according to the typical curriculum shown under their major department in this catalog. Part-time students may modify the order of courses with advisor approval.

The course requirements during the freshman year are detailed within the curriculum given under each department.

Some of the sophomore year is common to all, and the remainder of the courses begin to point to the various fields of engineering; real specialization begins, however, in the junior year and carries on through the senior year. A fifth year of study leading to the master’s degree is strongly urged for qualified students of more than usual ability who feel they can profit from additional study.

Graduation with Honors

In recognition of high scholarship and professional attainments, Honors, Special Honors, or With Distinction may be awarded at graduation (at the discretion of the student’s major department). These honors are recorded on the diploma of the graduate and indicated in the commencement program. Grades earned during the semester of graduation will not be considered.

For Special Honors, a student must have a cumulative grade-point average of at least 3.80 and for Honors an average between 3.60 and 3.79. With Distinction is awarded at the discretion of the administrative council.

Transfer students to be considered for honors will be expected to complete a minimum of one-half of their work at the University of Colorado. Grades earned at other institutions will not be considered. Transfer students must have completed at least 50 hours at CU before their last semester and must have a minimum of 64 hours completed at graduation.

Humanities and Social Sciences Component of the Engineering Curriculum

See the UNDERGRADUATE CORE CURRICULUM IN ENGINEERING in this section of this catalog.

The intent of the humanities and social sciences (H&SS) component of an engineering program is to provide the student with a coherent and well-structured exploration of a substantive issue or theme appropriate to the engineering profession and/or of interest to the student from the disciplines within the social sciences, humanities, and fine arts areas. This component of the engineering program should be planned in consultation with an engineering faculty advisor to be sure that all College and departmental requirements are satisfied.

The faculty of the College of Engineering and Applied Science requires that 18 semester hours shall be considered the minimum of humanities and social sciences content of the degree-granting departments. However, some departments may require more than 18 hours and some departments specify particular courses that must be taken.

The required humanities and social sciences electives must include both breadth and depth, must include advanced level course work, and should be planned in consultation with the advisor from a list of humanities and social sciences courses approved by and available from the major department. A random selection of lower division courses will not satisfy the humanities and social sciences elective requirement.

The humanities and social sciences courses are taken from the following disciplines:

- Literature, Philosophy, and History
- Anthropology, Economics, Political Science, Psychology, and Sociology
- Fine Arts, Music, and Theatre--(appreciation and/or history)
- Courses such as accounting, contracts, management, elementary foreign languages, public speaking, and technical

writing are not acceptable as humanities and social sciences electives.

PLANNING AN ENGINEERING PROGRAM

It is the responsibility of all students:

- to be sure they fulfill all the requirements of their degree program;
- to meet with their department transfer credit advisor if appropriate;
- to meet with their department academic advisor at least once each year;
- to keep their senior check-out advisor informed of any changes in the student’s plans throughout their last year.

In order to become eligible for one of the bachelor’s degrees in the College of Engineering and Applied Science, a student, in addition to being in good standing in the University, must meet the following minimum requirements:

- Courses: The prescribed and elective work in any curriculum as determined by the appropriate department must be completed satisfactorily.
- Hours: A minimum of 128 hours, of which the last 30 shall be earned after matriculation and admission as a degree student in the College of Engineering and Applied Science at CU, is required for students in the four-year curriculum; however, many students may need to present more than the minimum hours because of certain departmental requirements and because they may have enrolled in courses which do not carry full credit toward a degree. The hours required for students in any double degree program may vary by department; as a guide, 158 semester hours are considered a minimum, but most students follow programs that bring the total above this figure.
- Grade Average: A minimum grade-point average of 2.0 (C) is required for all courses attempted, for all required courses, and for all courses taken from the student’s major department. A department may require a minimum of C in all major courses.
- Faculty Recommendation: The recommendation of the faculty of the department offering the degree and the approval of the faculty of the College of Engineering and Applied Science is required.
Incompletes and Correspondence Courses. It is the student's responsibility to ensure that all incompletes and correspondence courses are officially completed before the tenth week of the student's final semester in school.

Simultaneous Conferring of Degrees. For any double degree program, both bachelor's degrees must be conferred at the same commencement.

Commencement Exercises. Commencement exercises are held in May. Students finishing in December and August are encouraged to attend commencement the following May but may request diplomas be mailed.

UNDERGRADUATE DEGREES

In addition to the standard four-year degree programs previously listed, the College is involved in double degree programs.

Business and Engineering

Undergraduates in the College of Engineering and Applied Science with career interests in administration may complete all of the requirements for both a B.S. degree in engineering and a B.S. degree in business administration by extending their study programs to five years, including one or two summer terms. The business courses required by the College of Business and Administration may be started in the second, third, or fourth year, depending upon the curriculum plan for the particular field of engineering in which the student is enrolled.

Students interested in this undergraduate program are required to submit an application to the College of Business. Students should contact a business advisor to obtain the application form and determine an acceptable degree program.

Requirements for the undergraduate business degree and engineering degree must be completed concurrently. At least a 2.0 grade average must be earned in all business courses undertaken in the College of Business. No fewer than 30 semester credits in business courses from CU-Denver must be earned after admission to Business to establish residency credit. Courses offered or required by the College of Business may be used in lieu of electives required for undergraduate engineering degrees, subject to the approval of the individual department.

Before deciding upon the business option, a student should carefully consider, in consultation with departmental advisors, the relative advantages of the B.S. business-B.S. engineering curricula, the degree program of the Graduate School of Business Administration, and the Master of Science or the Master of Engineering degree program in the student's own engineering discipline.

The required business and non-business courses are listed in the College of Business and Administration section of this catalog. Please see a business advisor to set up a business degree program.

Joint Engineering Degrees

A student may obtain two engineering degrees by meeting the requirements and, by petition, obtaining the approval of both departments concerned and the dean. Thirty hours of elective or required subjects in addition to the largest minimum number required by either of the two departments must be completed. Of the 30 additional hours for the second degree, a minimum of 24 hours, with no fewer than 16 hours of design content, shall be in courses in the department concerned or in courses approved in writing in advance by the department as substitutes.

Premedicine Option

A professional school in a field such as medicine requires a student to have a college education prior to pursuing its professional courses. In practically all cases, medical students are university graduates, although occasionally a student may enter medical school after three years of university training. A student can prepare for medical school either in the College of Liberal Arts and Sciences or in the College of Engineering and Applied Science.

The desirability of obtaining an engineering education prior to undertaking a study of medicine is increasing continually, as medicine itself is evolving. A great deal of additional equipment, most of it electronic, is being developed to assist the medical practitioner in treatment of patients. Bio-engineering, engineering systems analysis, probability, and communication theory are highly applicable to medical problems. Improved communication techniques also are allowing the storage and retrieval of information not previously available to the medical doctor. An advanced knowledge of basic mathematics and computing techniques, along with increased understanding of physical chemistry, improves the scientific base upon which medical knowledge rests. It is therefore desirable that the medical practitioner and researcher in the future be well equipped with the tools which engineering can offer.

To provide at least a minimum of the necessary knowledge, the additional courses listed below are prescribed and must be completed with superior grades. General overall requirements for entry into most medical schools are given. Students can meet these requirements by careful substitution of electives in the engineering curriculum. In some cases where additional hours may be required, interested students should consult with the engineering department chairperson.

General chemistry (CHEM 2031, 2038, 2061, 2068) . . . . 2 sem. (8-10 sem. hrs.)
Organic chemistry (CHEM 3411, 3421, 3418, 3440) . . . . 2 sem. (8-10 sem. hrs.)
English composition . . . . 1 sem. (3 sem. hrs.)
Literature . . . . 2 sem. (6 sem. hrs.)

To prepare for a career in medicine in the College of Engineering and Applied Science, it is strongly recommended that the student follow a full four-year college program and earn a B.S. degree.

The Admissions Committee of the University of Colorado School of Medicine welcomes inquiries and visits from prospective students, particularly at the time of their first interest in medicine as their chosen profession.

Students desiring to enter a premedical program should consult the representative of the department involved. At CU-Denver, premedical advising is available through the Health Careers Advisor, NC 3411, 556-2689.

GRADUATE STUDY IN ENGINEERING

The College of Engineering and Applied Science at CU-Denver offers graduate programs in civil engineering, electrical engineering, and mechanical engineering. Course work toward the M.S. degree in computer science may also be taken at CU-Denver, but the degree is awarded by CU-Boulder.

For information regarding courses and requirements leading to the Master of Science, Master of Engineering, Master of Environmental Science, or to the Ph.D. degree, see the appropriate discipline heading in this section. For graduate admission information and policies, see The Graduate School section of this catalog.
Education for Employed Professional Engineers

Continuing education for employed engineers grows more important each year. Therefore, the College puts great emphasis upon making graduate courses available through evening and televised courses. The Master of Engineering degree permits graduate students more flexibility in defining specialized interdisciplinary fields that meet their professional needs. This degree has standards equivalent to those of the Master of Science degree.

In addition to credit course work, the College works jointly with the Division of Extended Studies to offer noncredit courses of interest to practicing engineers.

Concurrent B.S. and M.S. Degree Program in Engineering

Students who plan to continue in The Graduate School after completing the requirements for the B.S. degree may apply for admission to the concurrent degree program through their department early in the second semester of their junior year (after completion of at least 80 semester hours). Requirements are the same as for the two degrees taken separately: 128 credit hours for the B.S. degree and 30 credit hours for the M.S. degree. Humanities and Social Sciences requirements must be completed within the first 128 credit hours. A 3.0 grade-point average for all work attempted through the first six semesters (at least 96 credit hours) and written recommendations from at least two major-field faculty members are required.

The purpose of the concurrent degree program is to allow students, who qualify for graduate study and expect to continue for an advanced degree, to plan their graduate program from the beginning of the senior year rather than from the first year of graduate study. The student can then reach the degree of proficiency required to begin research at an earlier time, and can make better and fuller use of courses offered only in alternate years.

Students will be assigned faculty advisors to help them develop the program best suited to their particular interests. Those in the program will be encouraged to pursue independent study on research problems or in areas of specialization where no formal courses are offered. A liberal substitution policy will be followed for courses normally required in the last year of the undergraduate curriculum.

The program selected must be planned so that the student may qualify for a B.S. degree after completing the credit-hour requirements for the degree if the student so elects, or if the student's grade-point average falls below the 3.0 required to remain in the program. In this case, all hours completed with a passing grade while in the program will count toward fulfilling the normal requirements for the B.S. degree.

There will be no credit given toward a graduate degree for courses applied to the B.S. degree requirements; however, students are still eligible to apply for admission to The Graduate School under the rules set forth in The Graduate School section of this catalog. Normally, however, the student will apply for admission to The Graduate School when at least 122 of the 128 credit hours required for the B.S. degree have been completed, and will be awarded the B.S. and M.S. degrees simultaneously upon meeting the requirements set forth for the concurrent degree program.

Graduate Work in Business

Undergraduates in engineering who intend to pursue graduate study in business may complete some of the business background requirements as electives in their undergraduate programs. Seniors in engineering who have such intentions and appear likely to qualify for admission to graduate study in business may be permitted to register for graduate fundamentals courses which are designed to provide qualified students with needed background preparation in business. Students must see an advisor from the College of Business for approval.

PROGRAMS OF STUDY

Courses listed in the following curricula are typical illustrations only. Changes in specific courses may be necessary to accommodate students' needs and/or changes in institution requirements.

Applied Mathematics

Math Coordinator: Collin Hightower
Office: CU-Denver Building, Room 512
Telephone: 556-3913 or 556-8442
Engineering Coordinator: Max Morstad
Office: NC 3024
Telephone: 556-2870

The College of Liberal Arts and Sciences offers all courses in mathematics, both required and elective, for undergraduate and graduate students in the College of Engineering and Applied Science. Three curricula leading to the degree B.S. (A. Math.) are offered. In Option I, the student takes an approved minor from a CU-Denver engineering department. In Option II, the student takes distributed course work in engineering departments, including a solid grounding in mechanics, circuits, and materials. Option III is a joint mathematics-computer science program. Regardless of the option chosen, each student is expected to complete a minimum of 45 semester hours of course work in mathematics beginning with MATH 1401, Calculus I.

The undergraduate curriculum is designed to give training in mathematics and in engineering and science. The use of numerical methods and computers is included.

Students should plan a complete program and obtain the approval of the engineering coordinator at the beginning of the sophomore year and before registering for their last 30 hours. Advising each semester is encouraged.

The B.S. degree in applied mathematics requires the completion of a minimum of 128 credit hours of course work with an average grade of C or better (a 2.0 grade-point average) and a grade of C or better in all mathematics courses.

TYPICAL CURRICULUM FOR B.S. (APPLIED MATHEMATICS)

FRESHMAN YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1401. Analytic Geometry and Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 1130. Engineering General Chemistry or CHEM 2031 and 2038</td>
<td>5</td>
</tr>
<tr>
<td>ENGL 1020. Writing Workshop I</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 1025. Graphics and Computer Aided Design</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

Second Semester

| MATH 2411. Analytic Geometry and Calculus II | 4 |
| CSC 1410. Fundamentals of Computing (see note 5) | 3 |
| PHYS 2311. General Physics I | 4 |
| PHYS 2321. General Physics Lab. I | 1 |
| H&SS Common Core Elective (see note 1) | 3 |
| Total | 15 |

SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 2421. Analytic Geometry and Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 2331. General Physics II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 2341. General Physics Lab. II</td>
<td>1</td>
</tr>
</tbody>
</table>
CMMU 2101. Speechmaking 3
H&SS Common Core Elective (see note 1) 3
Approved electives (see notes 3 and 4) 3
Total 18

Second Semester
MATH 3000. Introduction to Abstract Mathematics 3
MATH 3191. Applied Linear Algebra 3
ENGL 2024. Intermediate Composition or ENGL 3154. Technical Writing 3
Approved electives (see notes 3 and 4) 5
H&SS Common Core Elective (see note 1) 3
Total 17

JUNIOR YEAR
First Semester
MATH 3200. Elementary Differential Equations (Required) 3
MATH 3810 or 4810. Probability Theory (see note 3) 3
Approved electives (see notes 3 and 4) 4
Total 16

Second Semester
MATH 4310. Advanced Calculus I (and/or MATH 4408. Applied Graph Theory) (see note 3) 3
Approved electives (see notes 3 and 4) 11
H&SS Common Core Elective (see note 1) 3
Total 17

SENIOR YEAR
First Semester
Approved electives (see notes 3 and 4) 12
H&SS Common Core Elective (see note 1) 3
Total 15

Second Semester
Approved electives (see notes 3 and 4) 12
H&SS Common Core Elective (see notes 1 and 2) 3
Total 15

Requirements under each option are as follows:

Option I (Specialty engineering) Semester Hours
Specialty in a specific engineering department 18–30
Upper division mathematics electives (see note 3) 18

Other electives 5–17
Required humanities and social sciences electives (see note 1) 21

Option II (Distributed engineering) Semester Hours
Elective in civil, electrical, and mechanical engineering 22–30

A minimal program would consist of the following courses:
CE 2121, 3111; EE 2132, 2142, 3133;
ME 3024, 3021, or CE 3313; or their equivalents.
Upper division mathematics electives (see note 3) 18
Other electives 5–13
Required humanities and social sciences electives (see note 1) 21

Option III (Computer science) Specific courses required under Option III:
CSC 1510 3
CSC 2421 3
CSC 2525 3
CSC 3401 3
CSC 3415 3
CSC electives 6
MATH 4408 3
MATH 4650 or 4576 3
Upper division mathematics electives (see note 3) 15
Other electives (CE 2121 or 3131, EE 3030 or 2132, ME 3024 or 3022 recommended) 5–14
Required humanities and social sciences electives (see note 1) 21

Notes for B.S. (Applied Mathematics)
1. The required Humanities and Social Sciences (H&SS) core curriculum is listed in the section entitled Undergraduate Core Curriculum in Engineering on a previous page of this catalog and is also available in the department office and the Office of the Dean. Students who have already completed part of their H&SS requirements should plan the remaining course work with the engineering coordinator to ensure compliance with this transition in the curriculum.
2. Students may take upper division humanities and social sciences electives pass/fail, subject to the regulations of the College of Engineering and Applied Science.
3. A minimum of 45 semester hours of course work in mathematics is required beginning with MATH 1401. Students considering an advanced degree should definitely take both MATH 4310 and 4320, Advanced Calculus I and II. A two-semester sequence from either MATH 4408-4409, or MATH 4650-4660, or MATH 4576-4577 is required for Option III. One or both of the following courses is strongly recommended for all options: MATH 4791, Math Modeling, or MATH 4779, Math Clinic.
4. In addition to CSC 1410, ENGR 1025 and 3012, the student must take a minimum of 18 hours of approved engineering or computer science courses excluding chemistry, mathematics, and physics courses. Furthermore, the student who does not have a strong interest in applications of mathematics to engineering is encouraged to consider a major in mathematics in the College of Liberal Arts and Sciences.
5. Students in either Option I or II may take CSC 1100 or 1410; however, any student planning to take additional CSC courses must take CSC 1410.

Civil Engineering
Chair: N. Y. Chang
Staff Assistant: Jean Smith
Office: NC 3027
Telephone: 556-2871
Associate Professors: James C-Y. Guo, David W. Hubly, Bruce N. Janson, Lynn E. Johnson, Oren G. Strom, Jonathan T.H. Wu
Assistant Professors: Judith J. Stalnaker, Andreas S. Vlahinos
Associate Professor Adjunct: William R. Hamilton
Professor Adjunct: Fu Hua Chen, Jorj O. Osterberg
Professors Emeritus: Paul E. Bartlett, Ernest C. Harris, Martin L. Moody

Civil engineers are prime movers in improving our living environment. They are responsible for planning, design and construction of: environmental management systems including water and wastewater treatment plants, water distribution systems, waste collection, treatment and disposal systems; buildings, bridges, and other structures; transportation systems such as highways, airports, railroads, and pipelines; water resources systems including dams, and reservoirs. In preparing for activity in such a broad field, the civil engineer receives a similar broad but balanced education, with studies in mathematics; the basic sciences (physics, chemistry and geology); engineering sciences such as statics, dynamics and thermodynamics; material science and fluid mechanics; and in communications, the humanities and social sciences— as well as in the technical areas of civil engineering practice. This broad
education makes available diverse career opportunities and is part of the reason that civil engineers so often hold management and policy making positions. CU-Denver’s civil engineering graduates usually find their first professional employment with consulting engineering firms, government agencies, and various industries.

UNDERGRADUATE

The CU-Denver civil engineering curriculum and faculty place balanced emphasis on six principal areas of civil engineering practice: environmental, geotechnical, structural, transportation, water quality and water resources engineering. In each of these areas, the student receives instruction in the planning, design and analysis methods used. Micro and main frame computer skills are taught early in the program of study and used frequently in subsequent courses.

Typical Curriculum for B.S. (Civil Engineering)

For students graduating in May 1994 or thereafter, the required program of study for the Bachelor of Science degree in Civil Engineering is shown below. A minimum of 136 semester hours is required. The faculty provide advising to help students develop an efficient study plan. To receive the Bachelor of Science Degree in Civil Engineering, the student must satisfactorily complete all the course work in the curriculum shown below, satisfy all University graduation requirements, and maintain at least a 2.0 grade-point average in the civil engineering courses.

1. Basic Science and Mathematics (34 semester hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1401-4</td>
<td>Calculus I</td>
<td></td>
</tr>
<tr>
<td>MATH 2410-3</td>
<td>Calculus II for Engineers</td>
<td></td>
</tr>
<tr>
<td>MATH 2420-3</td>
<td>Calculus III for Engineers</td>
<td></td>
</tr>
<tr>
<td>MATH 3191-3</td>
<td>Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>MATH 3200-3</td>
<td>Differential Equations</td>
<td></td>
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<tr>
<td>PHYS 2311-4</td>
<td>Physics I (calculus based)</td>
<td></td>
</tr>
<tr>
<td>PHYS 2321-1</td>
<td>General Physics Laboratory I</td>
<td></td>
</tr>
<tr>
<td>PHYS 2331-4</td>
<td>Physics II (calculus based)</td>
<td></td>
</tr>
<tr>
<td>CHEM 1130-5</td>
<td>Engineering General Chemistry</td>
<td></td>
</tr>
<tr>
<td>GEOL 1072-4</td>
<td>Physical Geology or MATH* 3800-3</td>
<td></td>
</tr>
</tbody>
</table>

2. Humanities/Social Sciences (21 semester hours)

The Humanities and Social Sciences (H&SS) common core requirements of the College of Engineering and Applied Science are listed in the Common Core Requirement Guide available in the civil engineering department office. A total of 21 credit hours is required in Social Science (a six-hour sequence), Behavioral Science (three hours), Humanities (a six-hour sequence), Arts (three hours), and an upper level Multicultural Diversity course (an additional three-hour course in one of the above six-hour sequences).

3. Communications (9 semester hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 1020-3</td>
<td>Writing Workshop II</td>
<td></td>
</tr>
<tr>
<td>CMMU 2101-3</td>
<td>Speech Making, and other</td>
<td></td>
</tr>
<tr>
<td>ENGL 3154-3</td>
<td>Technical Writing or ENGL 2024-3</td>
<td>Intermediate Composition.</td>
</tr>
</tbody>
</table>

4. General Engineering (12 semester hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 1025-3</td>
<td>Engineering Graphics and Computer Aided Design</td>
<td></td>
</tr>
<tr>
<td>CSC 1100-3</td>
<td>Computing with FORTRAN</td>
<td></td>
</tr>
<tr>
<td>ENGR 3012-3</td>
<td>Thermodynamics</td>
<td></td>
</tr>
<tr>
<td>EE 3030-3</td>
<td>Electric Circuits and Systems</td>
<td></td>
</tr>
<tr>
<td>ENGR 4000-0</td>
<td>Senior Seminar</td>
<td></td>
</tr>
</tbody>
</table>

5. Civil Engineering Required Courses (39 semester hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 2121-3</td>
<td>Analytical Mechanics I (Statics)</td>
<td></td>
</tr>
<tr>
<td>CE 2212-3</td>
<td>Plane Surveying</td>
<td></td>
</tr>
<tr>
<td>CE 3111-3</td>
<td>Analytical Mechanics II (Dynamics)</td>
<td></td>
</tr>
<tr>
<td>CE 3121-3</td>
<td>Mechanics of Materials</td>
<td></td>
</tr>
<tr>
<td>CE 3141-2</td>
<td>Materials Testing Laboratory</td>
<td></td>
</tr>
<tr>
<td>CE 3154-2</td>
<td>Water Quality Laboratory</td>
<td></td>
</tr>
<tr>
<td>CE 3313-3</td>
<td>Theoretical Fluid Mechanics</td>
<td></td>
</tr>
<tr>
<td>CE 3323-2</td>
<td>Applied Fluid Mechanics</td>
<td></td>
</tr>
<tr>
<td>CE 3414-3</td>
<td>Design of Water/Wastewater Systems</td>
<td></td>
</tr>
<tr>
<td>CE 3505-3</td>
<td>Structural Analysis Engineering</td>
<td></td>
</tr>
<tr>
<td>CE 3602-3</td>
<td>Transportation Engineering</td>
<td></td>
</tr>
<tr>
<td>CE 3708-3</td>
<td>Soils and Foundation Engineering</td>
<td></td>
</tr>
<tr>
<td>CE 4067-3</td>
<td>Senior Design Projects</td>
<td></td>
</tr>
<tr>
<td>CE 4718-2</td>
<td>Intermediate Soils Engineering (Soils Laboratory)</td>
<td></td>
</tr>
</tbody>
</table>

Civil Engineering Elective Courses (21 semester hours)

Select two from:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 4427-3</td>
<td>Municipal Design</td>
<td></td>
</tr>
<tr>
<td>CE 4602-3</td>
<td>Highway Engineering</td>
<td></td>
</tr>
<tr>
<td>CE 4738-3</td>
<td>Intermediate Foundations Engineering</td>
<td></td>
</tr>
</tbody>
</table>

Select two from:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 4565-3</td>
<td>Timber Design</td>
<td></td>
</tr>
<tr>
<td>CE 4575-3</td>
<td>Structural Steel Design</td>
<td></td>
</tr>
<tr>
<td>CE 4585-3</td>
<td>Reinforced Concrete Design</td>
<td></td>
</tr>
</tbody>
</table>

Science, math, or engineering electives suggested courses are:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 4077-3</td>
<td>Engineering Economy</td>
<td></td>
</tr>
<tr>
<td>CE 4087-3</td>
<td>Engineering Contracts</td>
<td></td>
</tr>
<tr>
<td>CE 4537-3</td>
<td>Numerical Methods for Engineers</td>
<td></td>
</tr>
<tr>
<td>CE 4494-3</td>
<td>Intro. to Environmental Pollution</td>
<td></td>
</tr>
</tbody>
</table>

CE design courses not used to satisfy the above requirements 5000-level CE courses.

A typical four-year program of study is shown below.

FRESHMAN YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1401. Analytic Geometry and Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>CSC 1100. Computing with FORTRAN</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1130. Engineering General Chemistry (see note 2)</td>
<td>5</td>
</tr>
<tr>
<td>ENGL 1020. Writing Workshop II</td>
<td>3</td>
</tr>
<tr>
<td>Humanities and social sciences elective (see note 3)</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
</tr>
</tbody>
</table>

SECOND SEMESTER

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 2410. Calculus II for Engineers</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>PHYS 2311. General Physics I</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>PHYS 2321. General Physics Lab I</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CE 2212. Plane Surveying</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ENGR 1025. Engineering Graphics and CAD</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CMMU 2101. Speech Making</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td></td>
</tr>
</tbody>
</table>

SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 2420. Calculus III for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 2331. General Physics II</td>
<td>4</td>
</tr>
<tr>
<td>CE 2121. Analytical Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>Communications elective (see note 1)</td>
<td>3</td>
</tr>
<tr>
<td>Humanities and social sciences elective (see note 3)</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
</tr>
</tbody>
</table>

SECOND SEMESTER

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 3191. Applied Linear Algebra</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CE 3121. Mechanics of Materials</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CE 3141. Materials Testing Laboratory</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>CE 3154. Water Quality Laboratory</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
GEOL 1072. Physical Geology I or ............................................ 4
MATH 3800. Probability and .................................................. 3
Statistics for Engineers and .................................................. 3
PHYS 2341. General Physics Lab II ................................. 1
Humanities and social sciences elective ........................... (see note 3) 3
Total .................................................................................... 17

JUNIOR YEAR
First Semester  ............................................................................
MATH 3200. Elementary Differential ................................................. Equations 3
3
CE 3111. Analytical Mechanics II .............................................. 3
CE 3313. Theoretical Fluid Mechanics ....................................... 3
CE 3505. Structural Analysis .................................................... 3
CE 3602. Transportation Engineering ......................................... 3
Humanities and social sciences elective (see note 3) .............. 3
Total .................................................................................... 18

Second Semester  ............................................................................
CE 3323. Applied Fluid Mechanics ........................................... 3
CE 3414. Design of Water and .................................................. 3
Wastewater Systems ................................................................
CE 3708. Introduction to Soils and .......................................... 3
Foundation Engineering .........................................................
CE 4718. Intermediate Soil Mechanics ..................................... 2
ENGR 3012. Thermodynamics .................................................. 3
Humanities and social sciences elective (see note 3) ......... 3
Total .................................................................................... 17

SENIOR YEAR
First Semester  ............................................................................
EE 3030. Electric Circuits and Systems ........................................ 3
Civil engineering design electives ........................................... (see note 4) 6
Science, math, or engineering electives ............................... (see note 5) 6
Humanities and social sciences elective (see note 3) ......... 3
ENGR 4000. Senior Seminar ..................................................... 0
Total .................................................................................... 18

Second Semester  ............................................................................
Civil engineering design electives ........................................... (see note 4) 6
CE 4067. Senior Design Project ................................................. 3
Humanities and social sciences elective (see note 3) ......... 3
Science, math, or engineering elective ............................... (see note 5) 3
Total .................................................................................... 15

Notes for B.S. (Civil Engineering)
1. Take either ENGL 3154, Technical Writing, or ENGL 2024, Intermediate Composition.
2. Or CHEM 2031 and 2038. CHEM 2031 is required for students wishing to take CHEM 2061 and CHEM 2068 as general electives.
3. In consultation with a faculty advisor each student develops a study plan in the humanities and social sciences that contains primary, secondary, and minor focus areas, which conforms with the College and the core curriculum guidelines. The study plan must include at least 21 credit hours, and must also include at least one upper division course in the student's primary focus area.
4. Civil engineering design elective courses are chosen by selecting two courses from each of the two groups shown below.

STRUCTURES GROUP:
CE 4565. Timber Structure Design ........................................ 3
CE 4575. Design of Steel Structures ....................................... 3
CE 4585. Reinforced Concrete Design .................................... 3

MUNICIPAL/TRANSPORTATION/GEOTECHNICAL GROUP:
CE 4427. Municipal Design .................................................... 3
CE 4602. Highway Engineering ................................................. 3
CE 4738. Foundation Engineering ............................................ 3

5. Science, math, or engineering electives.
Suggested courses are: CE 4077-3, CE 4087-3, CE 4537-3, CE 4494-3, CE design courses; any 5000-level CE courses.
This new B.S.C.E. curriculum requires 136 semester hours and should become effective for students graduating in or after May 1994. The Undergraduate Common Core in Engineering, described in the general engineering section of this catalog, is also included in this revised curriculum.

GRADUATE
Master of Science Program
The CU-Denver Department of Civil Engineering offers the Master of Science degree in the areas of environmental, geotechnical, structural, transportation, and water resources and water quality engineering. The program is designed for practicing engineers with all courses being offered in the evenings or on Saturday.

Master of Engineering and Ph.D. Programs
The Master of Engineering and Ph.D. degrees are also offered in cooperation with the CU-Boulder Department of Civil, Environmental and Architectural Engineering (CEAE). The Master of Engineering degree is described under a separate heading in this catalog, and the Ph.D. degree is described in the University of Colorado at Boulder catalog.

Requirements for Admission
Applicants for the CU-Denver master of science in civil engineering graduate programs must satisfy the requirements of the Graduate School described in The Graduate School section of this catalog, have an ABET accredited undergraduate civil engineering degree, and have an undergraduate grade-point average of 3.0 (4 point scale) or better. Applicants whose previous work was in a field other than civil engineering may also be admitted into the master of science degree programs; however, such applicants must take undergraduate basic science and/or civil engineering courses as required by the Department of Civil Engineering and the student's graduate advisor.

Degree Requirements
Two M.S. degree programs are available in civil engineering—a thesis option (Plan I), and a non-thesis option (Plan II). The Plan I program requires the completion of a minimum of 21 semester hours of graduate level course work and a research thesis (4 semester credits), and the Plan II requires the completion of a minimum of 27 semester hours of graduate level course work and an engineering report (3 semester hours). The courses are selected by the mutual agreement of the student, a graduate advisor, and a graduate advisory committee. The research thesis or report topics must be approved by the graduate advisor. Each student must also satisfy the degree requirements of The Graduate School and the College of Engineering and Applied Science.

Courses
C.E. 1840-1 to 6. Independent Study. This category is intended for topics which students may wish to pursue on their own initiative, with guidance from a professor who agrees to limited consultation on the work and to award credit when the project is completed. Departmental approval is required.
C.E. 2121-3. Analytical Mechanics I. (M.E. 2023-3.) A vector treatment of force systems and their resultants; equilibrium of trusses, beams, frames, and machines, including internal forces and three-dimensional configurations; static friction; properties of areas; distributed loads; hydrostatics. Prereq or coreq: MATH 2421, ENGR 1025. Prereq: PHYS 2311.
C.E. 2212-3. Plane Surveying. Observation, analysis, and presentations of basic linear, angular, area, and volume field measurements common to civil
An introduction to the fundamentals of fluid properties, hydrostatics, the momentum principle, similitude and water purity parameters. Prereq: C E 2222-3. Engineering Measurements. Elementary principles of measurements; methodology, instrumentation, and analysis of data. Prereq: C E 2221.

C E 2800-283X-1 to 6. Special Topics. C E 2840-1 to 6. Independent Study. This category is intended for topics which students may wish to pursue on their own initiative, with guidance from a professor who agrees to limited consultation on the work and to award credit when the project is completed. Departmental approval is required.

C E 3111-3. Analytical Mechanics II. A vector treatment of dynamics of particles and rigid bodies including rectilinear translation, central-force, and general motion of particles, kinematics of rigid bodies; the inertia tensor, plane motion of rigid bodies; energy and momentum methods for particles, systems of particles, and rigid bodies. Prereq: C E 2121.

C E 3121-3. Mechanics of Materials. Mechanical properties of materials; stresses and strains in members subjected to tension, compression and shear; combined stresses; flexural and shearing stresses in beams; deflections of beams, column analysis, principal stresses. Prereq: C E 2121.

C E 3131-3. Applied Mechanics. A limited study of particle and rigid body mechanics. Subject coverage introduces vector concepts of force, moment, and equilibrium, then concentrates on kinematics and kinetics of particles in motion, including oscillatory and orbital, and finally discusses rigid body motion with emphasis on energy and momentum methods. Prereq: MATH 2421 and PHYS 2311. (Not for C E or M E majors.)

C E 3141-2. Materials Testing Laboratory. One hour of lecture and one 3-hour lab per week. Emphasizing mechanical properties of commonly used structural materials, such as steel, aluminum, timber, and concrete; and the testing and research techniques necessary to obtain these properties. Prereq or coreq: C E 3121.

C E 3154-2. Water Quality Laboratory. Lecture and lab weekly, discussing techniques and making measurements of water quality parameters. Prereq: CHEM 1130 or 2031 and 2038. Prereq or coreq: MATH 2411.

C E 3313-3. Theoretical Fluid Mechanics. An introduction to the fundamentals of fluid mechanics. Subject matter includes fluid properties, hydrostatics, the continuity principle, the energy principle, the momentum principle, similarity and dimensional analysis, forces on immersed bodies, and laminar and turbulent flow in a closed conduit. Prereq: C E 2121.

C E 3323-3. Applied Fluid Mechanics. Applications of the principles of fluid mechanics to analysis and design of hydraulic systems involving pressurized pipelines, open channels and pumps. An introduction to fluid measurements which includes laboratory demonstrations and experiments. Prereq: C E 3313.

C E 3414-3. Design of Water and Wastewater Systems. Covers the design of water distribution and wastewater collection systems. Topics include the design process, estimation of water demand and sewage flows, analysis of pipe networks and sewer systems, cost estimating, and design selection. Field trips are required. Prereq or coreq: C E 3323 or consent of instructor.


C E 3602-3. Transportation Engineering. Introduction to the technology, operating characteristics, and relative merits of highway, airway, waterway, railway, pipeline, and conveyor transportation systems. Recent transportation system innovations. Prereq: junior standing or consent of instructor.

C E 3708-3. Introduction to Geotechnical Engineering. Introduction to physical and mechanical properties of soils; seepage, consolidation, shear strength, bearing capacity, lateral earth pressure, stability, and pile behavior, with preliminary analysis of structures affected by soil properties. Prereq: C E 3121; prereq or coreq: C E 3313.

C E 3800-383X-1 to 6. Special Topics. C E 3840-1 to 6. Independent Study. This category is intended for topics which students may wish to pursue on their own initiative, with guidance from a professor who agrees to limited consultation on the work and to award credit when the project is completed. Departmental approval is required.

C E 4067-3. Senior Design Projects. Senior civil engineering students, working in teams, are assigned significant open-ended design problems requiring the synthesis of material learned in previous engineering courses for solution. Design teams work independently under the supervision of a civil engineering faculty member. Prereq: senior standing.


C E 4087-3. Engineering Contracts. Laws met by the practicing engineer, types of contracts, specification writing, laws on contracts, agency, partnership, sales, and property, with primary emphasis on rights and duties of the engineer. Prereq: senior standing.


C E 4427-3. Municipal Design. Analysis and design of municipal public works, including street systems; drainage and flood control systems; water collection, treatment, and distribution systems; sewage collection and treatment systems. The interplay between these systems and their correlation with land characteristics and use. Prereq: C E 3602; prereq or coreq: C E 3414.

C E 4494-3. Introduction to Environmental Pollution. A multi-disciplinary examination of the problems of environmental pollution. The course focuses particularly on the chemical, social, biological, economic, and engineering aspects of environmental pollution; composition and sources; health and social costs; methods of reduction and control. Open to any non-engineering or engineering student having at least junior standing. Prereq: upper division standing.


C E 4718-3. Intermediate Soils Engineering. Continuation of C E 3708 into selected topics in soils engineering. Laboratory experiments are performed to assess index properties of soils including gradation, soil consistency, and specific gravity; moisture/density relations; soil classification, permeability, compressibility; and shear strength of soils. These soil parameters are then used in a design project required for the course. Prereq or coreq: C E 3708.


C E 4800-483X-1 to 6. Special Topics. Supervised study of special topics of interest to students under guidance of instructor. Prereq: consent of instructor.

C E 4840-1 to 6. Independent Study. This category is intended for topics which students may wish to pursue on their own initiative, with guidance from a professor who agrees to limited consultation on the work and to award credit when the project is completed. Departmental approval is required.


C E 5121-3. Intermediate Mechanics of Materials. Intermediate-level course in the mechanics of deformable bodies. Plane stress and strain; stress-strain relation with emphasis on elastic and inelastic behavior of members, and theories of failure. Discussion of basic methods of structural mechanics, with applications to asymmetric and curved beams, thick-walled pressure vessels, torsion of members of noncircular section, and other selected problems in stress analysis. Prereq C E 3121 and MATH 3020 (or 3191 and 3200).


C E 5333-3. Applied Hydrology. Engineering application of principles of hydrology. Subject matter includes precipitation measurement and data analysis, stream flow measurement and water budget analysis, evaporation and evapotranspiration, infiltration and rainfall-runoff relationships, hydrograph properties and unit hydrograph analysis, flood frequency, analysis and flood routing. Prereq: consent of instructor.

C E 5334-3. Groundwater Hydrology. Topics include groundwater occurrence, hydrologic cycle and budget, interactions with surface waters, principles of groundwater flow, well hydraulics, well field design, regional flow systems, water and pollutant chemistry, computer modeling, and groundwater processes. Emphasis is on quantitative analysis methods for groundwater resource inventory, design and management. Prereq: graduate standing or consent of instructor.

C E 5334-3. Open Channel Hydraulics. Engineering analysis and design of natural and artificial open channels. Application of uniform flow concept to design of erodible and nonerodible channels. Application of energy and momentum principles to conditions of gradually varied flow, spatially varied flow and rapidly varied flow. Prereq: C E 3323 or consent of instructor.

C E 5344-3. Computational Hydraulics. Derivation of basic principles of unsteady open channel flow. Application of kinematic wave, diffusive wave and dynamic wave approaches to open channel flow and flow in a drainage or river network. Introduction of numerical finite difference method, characteristic method and simplified analytical method to the solutions of unsteady open channel flow. Evaluation of some computer simulation models such as DWOPER including requirements of input data and sensitivity to parameters. Prereq: C E 5343.


C E 5414-3. Physical Process of Water Quality Engineering. Design and analysis of physical processes used in treatment of water and waste water. Prereq: graduate standing or consent of instructor.


C E 5457-3. Administration of Public Works. A descriptive course concerned with the administration of engineering and planning aspects of urban public works. Prereq: graduate standing in civil engineering or public administration, or consent of instructor.

C E 5504-3. Public Health Engineering. Environmental engineering methods used in the protection of public health and the management of our environment. Topics include water pollution control, air pollution control, hazardous waste management, health effects, and public health protection. Prereq: graduate standing or consent of instructor.

C E 5511-3. Introduction to Finite Element Analysis. Systematic formulation and application of the finite element approximation to the solution of engineering problems. Topics include one- and two-dimensional elasticity problems, two-dimensional heat flow and irrational fluid flow. Elements considered include triangular and quadrilateral elements formulated by elementary and isoparametric techniques. Prereq: graduate standing or consent of instructor.

girder design, and other topics determined by class interest. Prereq: C E 4575.
C E 5622-3. Urban Transportation Planning. Definition of urban transportation problems, sociology of urban regions, history of urban growth, models of urban growth, population forecasts, land use surveys and planning, trip generation, characteristics, distribution and assignment, model split, system evaluation, CBD transportation planning. Prereq: graduate standing or consent of instructor.
C E 5632-3. Airport Planning and Design. National airport system plan, air travel demand, geometric design of airport facilities, design of airport pavement and drainage structures, and airport environmental impact. Prereq: C E 3602 and graduate standing or consent of instructor.
C E 5642-3. Urban Traffic Characteristics. Human and vehicular characteristics, surveys and volume studies, origin and destination studies, traffic flow theory, stream characteristics, intersection characteristics, signalized intersections, accident characteristics, parking characteristics, highway lighting, and miscellaneous topics. Prereq: C E 3602 and graduate standing or consent of instructor.
C E 5652-3. Urban Traffic Operations. Traffic control devices, traffic signal timing and equipment, signal systems, computer applications to traffic control, urban operations, freeway operations, traffic applications of linear programming, transportation problems, dynamic programming, surveillance, and control. Prereq: C E 5642 and graduate standing or consent of instructor.
C E 5662-3. Transportation System Safety. Safety aspects of highway, railroad, and airway transportation systems. Accident analysis, accident prevention, economic consequences of accidents. Prereq: C E 3602 and graduate standing or consent of instructor.
C E 5682-3. Pavement Design. Design of flexible and rigid pavements for highways and airports; stress analysis in flexible and rigid pavements; design of joints and reinforcing steel for rigid pavements; principles of subgrade stabilization. Prereq: C E 3602 and 4718.
C E 5708-3. Advanced Soils Engineering. A unified treatment of the foundation of soil engineering analysis. Topics include stress-strain-strength of soils; generalized limiting equilibrium analysis; stability analyses of earth retaining structures, slopes, and shallow foundations; probabilistic approach of stability assessment; computation of settlement of foundations in sand and clay and time-rate of consolidation and critical state concept. Special attention is directed toward the illustration of theory through practical examples. Prereq: C E 3708 and 4718 plus graduate standing or consent of instructor.
C E 5718-3. Engineering Properties of Soils. Engineering properties of soils, including index properties, permeability, stress-strain behaviors, shear strength, compressibility, critical state soil models and their application in interpreting soil behaviors. Attention also is directed to laboratory and in-situ tests to examine the validity of shear strength and compressibility theories and their application to stability and settlement analysis. Prereq: C E 3708 and 4718, plus graduate standing or consent of instructor.
C E 5738-3. Foundation Engineering. Methods of subsurface exploration and sampling of soils, lateral support in open cuts, control of groundwater, analysis and design of shallow foundations, analysis and design of deep foundations, bridge abutments and caissons, underpinning, and application of modern computational techniques to analysis and design of foundations. Prereq: C E 5708 and 5718, plus graduate standing or consent of instructor.
C E 5778-3. Applied and Experimental Rock Mechanics. Surface exploration and characterization of rock masses, slope stability, analysis of rock masses; rock mass reinforcement; tunnel and shaft designs, design of underground rock chambers; foundations on rocks; and dam design. Prereq: C E 5768 or consent of instructor.
C E 5798-3. Dynamics, Soils, and Foundations. Principles of vibrations, and wave propagation in elastic, homogeneous, isotropic media; laboratory and in-situ measurements of soil properties; applications of these principles and properties to the design of foundations subject to dynamic loading generated by machinery, earthquakes, or blasts. Prereq: C E 5708 and 5718, plus graduate standing or consent of instructor.
C E 5808-583X-1 to 6. Special Topics. (Master's level). Topical courses offered once or on irregular intervals. Prereq: variable. Typical topics include: computer-aided structural engineering, prestressed concrete, nonmatrix structural analysis, geotechnical aspects of hazardous waste management, geographic information systems and facility management, groundwater hydrology, engineering project management, structural planning, engineering practice, spreadsheet applications, field instrumentation, hazardous wastes engineering, advanced steel design, hydraulic transients, foundations—expansive soils, sludge process design.
C E 5840-1 to 6. Independent Study. Available only through approval of the graduate advisor. Subjects arranged to fit needs of particular student.
applications to engineering problems. Discussion of the basic analytical and numerical methods of solutions. Prereq: CE 5121 and MATH 3020.


CE 6353: Hydraulic Design. Design of small dams, including reservoir size, spillways, and energy dissipators. Design of urban drainage and flood control facilities such as culvert transitions, roadside ditches, street inlets, detention/retention ponds, storm sewer system, drainage channels, and channel erosion controls, including vegetation, concrete, riprap protection. Design of floodplain encroachment, natural channel improvement, and bridge hydraulics. Prereq: CE 5333 and 5343.

CE 6515: Advanced Theory of Structures. Generalized approaches to the analysis of civil engineering and continuous elastic structures (such as plates and plane stress bodies) by force and displacement methods. Emphasis is on formulation by finite elements and solution by matrix methods. Prereq: CE 5515 and basic knowledge of computer programming.


CE 7840: Independent Study. Available only through approval of the graduate advisor. Subjects arranged to fill needs of particular student.


Computer Science and Engineering

Chair: John Clark
Senior Secretary: Marcia McCandless
Computer Science Office: NC 2605
Telephone: 556-4314
Faculty: Professors: John R. Clark
Associate Professors: Boris Stilman, William Wolfe
Assistant Professors: Gita Alaghband, Tom Altman, Carol A. Keene, Jay A. Rothman
Senior Instructors: Wilbur H. Goltermann Jr., Paul C. Novak
Professor Adjunct: F. Parker Fowler Jr.

UNDERGRADUATE

Computer Science and Engineering Program

The Bachelor of Science in computer science and engineering prepares students for creative work and graduate study in computer science, software engineering, and computer engineering. The emphasis is on fundamental concepts and basic principles with a long useful life. This distinguishes the program from more vocationally oriented programs which emphasize current technology. In this rapidly changing field, current technology is obsolete after only a few years, after which the vocational graduate is ill prepared to grow technically. Graduates of this program will be able to keep abreast of current technology as it evolves over the years, due to their strong grounding in fundamentals.

Early in the program, emphasis is placed on development of the conceptual foundations of computer science. Topics such as algorithm development, programming language concepts, information representation, and the structure of computers are presented from both a practical and conceptual standpoint. Later portions of the program focus on computer architecture, the interrelationship of hardware and software, and software design, theory, and practice.

Computer Science and Engineering Curriculum

The curriculum in computer science and engineering is planned to give breadth of background in computer science and engineering after establishing a solid foundation in mathematics and science. Each student will take electives emphasizing computer-related areas.

A list of these electives is to be prepared by the student and approved in advance by the student's advisor.

To be awarded the Bachelor of Science in Computer Science and Engineering, a student must satisfactorily complete all course work shown in the curriculum below, satisfy all University graduation requirements, and maintain at least a 2.0 grade point average in all computer science courses attempted (see Policy on Academic Progress in the College of Engineering introductory section of this catalog). All students are required to set up an appointment with the department senior check-out advisor before registering for the last 30 hours of their program.

Typical Curriculum for B.S. (Computer Science and Engineering)

FRESHMAN YEAR

First Semester Semester Hours
MATH 1401. Analytic Geometry and Calculus I ........ 4
CSC 1410. Fundamentals of Computing ....... 3
Chemistry (see note 2) .................. 5
ENGL 1020. Writing Workshop I (see note 1) .... 3
H&SS Core Courses (see note 1) ........ 3
Total .................. 18

Second Semester
MATH 2410. Calculus II for Engineers (see note 4) .... 3
CSC 1510. Logic Design ................ 3
CSC 2614. Discrete Math I .......... 3
PHYS 2311. General Physics I ........... 4
Science Lab I (see note 2) .......... 1
CMU 2101. Speechmaking (see note 1) .... 3
Total .................. 17

SOPHOMORE YEAR

First Semester Semester Hours
MATH 2420. Calculus III for Engineers (see note 4) .... 3
MATH 3191. Applied Linear Algebra ........ 3
CSC 2421. Data Structures and Program Design I .... 3
CSC 3614. Discrete Math II .......... 3
H&SS Core Courses (see note 1) ........ 3
ENGL 2024 or 3154 (see note 1) ........ 3
Total .................. 18

Second Semester
MATH 3200. Elementary Differential Equations .......... 3
CSC 2431. Data Structures and Program Design II .... 3
CSC 2525. Assembly Language and Computer Organization .... 3
Science Lecture II (see note 2) .......... 4
Science Lab II (see note 2) .......... 1
H&SS Core Course (see note 1) .......... 3
Total .................. 17

JUNIOR YEAR

First Semester Semester Hours
MATH 3800. Probability and Statistics for Engineers .... 3
CSC 3401. Analysis of Algorithms ........ 3
CSC 3415. Principles of Programming Languages ........ 3
Area electives (see note 3) ........ 6
H&SS Core Course (see note 1) ........ 3
Total .................. 18
Second Semester
MATH 4650. Numerical Analysis I ........ 3
CSC 3453. Operating System Concepts .... 3
CSC 4591. Computer Architecture ....... 3
Area elective (see note 3) ............... 3
Science elective (see note 2) ............ 3
H&S Core Course (see note 1) .......... 3
Total .................................... 18

SENIOR YEAR
First Semester                     Semester Hours
CSC 4034. Theoretical Foundations 3 of Computer Science
of Engineering ...................... 3
Area electives (see note 3) ......... 6
H&S Core Course (see note 1) ...... 3
Total .................................... 15

Notes for B.S. (Computer Science)
All students must satisfy this curricula if their graduation date is May 1994 or later. Students graduating prior to May 1994 may be allowed to satisfy different requirements from those shown above; students should check with departmental advisors to determine their degree requirements. The particular curriculum to be satisfied by each student is the one published in the catalog current at the time of his/her 30-hour senior checkout. Additional information is contained in the CS Printed Advisement Guide which is available in the CS office, NC 2605.

Second Semester
CSC 4739. Software Design Project .... 3
Area electives (see note 3) ......... 9
H&S Core Course (see note 1) ... 3
Total .................................... 15

2. SCIENCE: A total of 18 hours of the curriculum are devoted to science. The student is required to take a two-semester laboratory science sequence in either physics or chemistry. Within the 18 hour total, both PHYS 2311-4 and CHEM 2031-4 (or CHEM 1130-5) must be taken. Additionally, a science elective is required. This elective may be chosen from basic or engineering science. Refer to the CS Printed Advisement Guide, which is available in the CS office, NC 2605, for further information.

3. AREA ELECTIVES: The student must take any two of the four courses: CSC 4555-3, CSC 4287-3, CSC 4202-3, CSC 4666-3. These courses are Compiler Design, Database System Concepts, An Introduction to Artificial Intelligence, and Numerical Analysis II, respectively. Additional courses from computer science, mathematics, engineering, or cooperative education must be chosen. These additional area electives must be part of a plan approved by the department prior to taking the courses and must total 18 or more hours.

4. A student may elect to take MATH 2411-4 and MATH 2421-4 instead of MATH 2410-3 and MATH 2420-3. The extra credit hours will be applied to the area electives requirement.

Courses
CSC 1100-3. Computing with FORTRAN.
A first course in computer programming using the FORTRAN language. Basic language grammar, program structure, and problem solving techniques. (Credit toward a degree is not allowed for both CSC 1100 and 1140.) Prereq: MATH 1120. CSC 1410-3. Fundamentals of Computing. A first course in computing for those who will take additional computer courses. Covers the capabilities of a computer, the elements of a computer language, and the basic techniques for solving problems using a computer and a programming language. The Pascal programming language is used as the vehicle for teaching these concepts. Prereq or coreq: MATH 1401. (Credit toward a degree not allowed for both CSC 1100 and 1140.)
CSC 1510-3. Logic Design. The design of combinatorial and sequential switching circuits. Topics include Boolean algebra, Boolean function minimization techniques, combinatorial circuit synthesis, synchronous sequential circuit analysis and synthesis, iterative array design, asynchronous sequential circuit analysis and synthesis. Prereq: MATH 1120 or equivalent.
Development of proficiency in the use of the Macintosh as a generalized, state-of-the-art learning tool through completion of weekly projects in word processing, including use of dictionary, thesaurus, and formatting tools; authored (free-form) graphics; structured graphics (elementary CAD); spreadsheets with graphic presentations; database, with query, selection, reporting, and merging; integration of results among tools; project scheduling; and hypermedia, including elementary object-like scripting to control text, graphics, animation, and sound. One-hour lecture/demonstration plus two 75 minute laboratory sessions per week. Requires additional 4-6 hours to complete weekly project.
CSC 1951-3. Computer Mind Tools II.
CSC 2421-3. Data Structures and Program Design I. The second semester of a three-semester sequence in computing. Topics in the course include the conclusion of the study of Pascal, a first look at algorithm analysis, software development methodologies, data structures, abstract data types, and basic techniques such as sorting, searching, and recursion. Programming exercises are assigned throughout the semester. Prereq: CSC 1410 and ENGL 1020. Coreq: CSC 2614.
CSC 2431-3. Data Structures and Program Design II. The third semester of a three-semester sequence in computing. The course includes topics from software engineering such as problem analysis, design methodologies, coding and testing, and debugging techniques. Other topics include algorithm analysis, sorting, searching, recursion, data structures, abstract data types, and file systems. Programming exercises are assigned throughout the semester. Both Pascal and ADA will be used. Some of the assignments will require that the student use a specified operating system and/or hardware. Prereq: CSC 2421. Coreq: CSC 3614.
CSC 2525-3. Assembly Language and Computer Organization. (EE 2651.) Topics include computer architecture, program execution at the hardware level, programming in assembly language, the assembly process, hardware support of some high level language features, and a program's interface to the operating system. Programming exercises are assigned in this course. These exercises involve the use of specific hardware in designated laboratories. Prereq: CSC 1410 and 1510.
C SC 2614-3. Discrete Mathematics I. (MATH 2614.) First course of a two-semester sequence providing discrete mathematics concepts needed in computer science. Topics include symbolic logic, methods of proof, mathematical induction, principles of counting, functions and relations. Computer science applications and use of programming in problem solving are emphasized. Prereq: C SC 1410, MATH 1401.

C SC 2701-3. Macintosh Hypermedia. Intensive study and application of the revolutionary product, Hypercard, and its declaratory, object-oriented scripting language, HyperTalk. Applications as a front-end to the operating system and other programs; as a file manager and database management system in its own right; as a presentation tool with animation and sound; and as an intellectual tool (the "Knowledge Navigator"). Prereq: C SC 1950 or advanced Macintosh experience.

C SC 2800-2853-1 to 3. Special Topics. C SC 3401-3. Analysis of Algorithms. Introduction to design and analysis of algorithms requiring advanced data structures (trees, heaps, graphs, matrices). Includes design concepts such as divide and conquer and analysis concepts such as correctness and computational complexity. Applications including sorting, searching, and graph algorithms. Prereq: C SC 2431 and 3614.

C SC 3415-3. Principles of Programming Languages. An introduction to programming languages, e.g. FORTRAN, ALGOL, Pascal, ADA, and LISP. Elementary and structured data types, control structures, scope, formal syntax specification, and language design issues. Prereq: C SC 2431 and 2525.

C SC 3453-3. Operating Systems Concepts. A survey of the principles of computer operating systems and the essential components of an operating system, interfaces with compilers, interpreters, hardware and user programs will be considered. It is suggested that C SC 3453 and 4591 be taken concurrently. Prereq: C SC 2525, 3401; coreq: C SC 4591.

C SC 3614-3. Discrete Mathematics II. (MATH 3614.) Second course of a two-semester sequence providing discrete mathematics concepts needed in computer science. Topics include probability, recurrence equations, trees, graphs, and matrix algebra. Computer science applications and use of programming in problem solving are emphasized. Prereq: C SC 2614.

C SC 3708-3. Computing with 'C'. An introduction to problem solving using the 'C' computer language. Approximately one fourth of the course is devoted to 'C' program syntax and semantics. During the remainder of the course, problem solving techniques, algorithms, and program design techniques will be discussed. Prereq: two semesters of software development courses or appropriate industrial experience.

C SC 3718-3. Computing with ADA. A first course in programming in the ADA language. Topics include ADA's program structure, syntax and semantic issues, data structures and data types, ADA packages, control structures, exception handling, and concurrent execution. Prereq: C SC 3415.

C SC 3800-3839-1 to 3. Special Topics. C SC 3939-1 to 3. Cooperative Education. Faculty/employer supervised employment in industry. Enrollment is limited to students who fully complete a Contract for Cooperative Education Credit by the last day of the drop/add period. Prereq: C SC 2421.


C SC 4134-3. Applied Graph Theory. (MATH 4408.) An introduction to discrete structures and their applications. Major emphasis is on applications of graph theory to computer science, engineering, and operations research. Topics include connectivity, coloring, trees, Euler and Hamiltonian paths and circuits. Matching and covering problems, shortest route, and network flows. Prereq: MATH 3000.

C SC 4202-3. Introduction to Artificial Intelligence. Introduction of AI system implementations using the LISP programming language. Application of expert systems and natural language techniques will be covered in detail. Examination of non-numerical processing, AI systems architectures, user interfaces, intelligent databases, and specific LISP development environments. Prereq: C SC 3401, 3415, 3453.


C SC 4508-3. Introduction to Software Engineering. This course introduces the computer science student to project planning, requirement analysis, design methodologies, real-time system design and testing, and verification methods. Prereq: C SC 3415, 2421, and 3401.


C SC 4591-3. Computer Architecture. This course is concerned with computer arithmetic units, memory systems, control systems, and input-output units. The emphasis is on logic structure rather than electronic circuitry. It is suggested that C SC 3453 and C SC 4591 be taken concurrently. Prereq: C SC 2525; coreq: C SC 3453.


C SC 4701-3. Data Communications and Networks I. This course is an introduction to computer networks including some well-known systems and standards. Emphasis is placed on concepts such as modulation, routing algorithms, and protocol services. Each layer of the ISO OSI model is presented, from physical to application layer. Prereq: senior standing.

C SC 4711-3. Data Communication and Networks II. This course pulls together the concepts from C SC 4701, as one network, the AppleTalk network, is examined in detail. The students' projects will encompass everything from session establishment to routing table calculation. Prereq: C SC 4701.

C SC 4759-3. Software Design Project. A project laboratory in which students undertake a significant hardware design, software design, or simulation. The objective is the understanding of the specification - design - test cycle. Prereq: senior standing in computer science, ENGL 1020, and CMMU 2101, C SC 4508.


C SC 4840-1 to 8. Independent Study. (Undergraduate.) For seniors majoring in computer science.

C SC 4859-1 to 3. Cooperative Education. Faculty/employer supervised employment
in industry. Enrollment is limited to students who fully completed a Contract for Cooperative Education Credit by the last day of the drop/add period. Prereq: C SC 3415.

**GRADUATE COURSES**

Graduate courses are offered by the Department of Electrical Engineering, the Department of Computer Science, and the Department of Mathematics. The courses listed are not offered each semester. Check the department offices for tentative listings for future semesters.

**C SC 5144-3. Applied Combinatorics.** Major emphasis is on applied combinatorics and graph and combinatoric algorithms with applications in computer science and operations research. Topics include general counting methods, generating functions, recurrence relations, inclusion-exclusion, Ploya’s enumeration theory, and network algorithms. Prereq: graduate standing.

**C SC 5451-3. Algorithms.** Studies the analysis and design of algorithms: sequence and set algorithms, graph algorithms, geometric algorithms, numeric algorithms, NP-Completeness. Prereq: C SC 3401 and 3414.

**C SC 5463-3. Theory of Automata.** (MATH 5446.) Studies the relationships between classes of formal languages (regular, context-free, context-sensitive, phrase-structure) and classes of automata (finite-state, pushdown, turing machines). Additional topics include decidability and computability issues. Prereq: C SC 3614.

**C SC 5533-3. Fundamental Concepts of Programming Languages.** (EE 5531.) Studies the structure and design of imperative and functional programming languages: data types, control flow, parameter passing, type equivalence, syntactic structure. Examples are drawn from C, Pascal, Modula-2, ADA, and LISP. Prereq: C SC 3401 and 3415.

**C SC 5552-3. Non-numerical Techniques for Digital Computers.** A study of the methods used for implementing nonnumerical algorithms for artificial intelligence, dynamic storage allocation, list processing, recursive programming, and search. Special purpose languages such as LISP and PROLOG will be studied along with their implementations. Prereq: C SC 3415.

**C SC 5573-3. Operating Systems.** (EE 5571.) Investigates the logical design and organization of operating systems, and the interaction of their components. Topics will include I/O devices, file systems, scheduling, memory management, deadlocks and concurrent programming constructs and languages. Prereq: C SC 3401, 3415.

**C SC 5582-3. Artificial Intelligence.** (EE 5581.) The design of systems that have been created to perform tasks that require intelligence. Includes elements of speech, vision, and language understanding systems. Prereq: C SC 5552.

**C SC 5593-3. Advanced Computer Architectures.** (EE 5591.) A broad scope treatment of the important concepts in the structural design of computer architectures will be covered by studying unique features of several key systems. Techniques used in supercomputers and a number of advanced architectures will be studied in depth. Prereq: C SC 4591.

**C SC 5606/5616-3. Numerical Analysis I and II.** (MATH 5660/5661.) This is a full year, graduate level survey course in numerical analysis. The essential topics of the course include error analysis, direct and iterative methods of solution of systems of linear equations, solution of nonlinear equations, and systems of equations, interpolation and approximation, numerical differentiation and integration, numerical solution of ordinary and partial differential equations. Prereq: MATH 3191, 3200, and programming experience.


**C SC 5656-3. Non-linear Optimization.** (MATH 5665.) This course presents mathematical foundations of optimization with focus on nonlinear forms. Topics include convexity, duality, and optimality conditions. Concepts of algorithm design and analysis are developed from these basic topics and elements of fixed point theory. Particular algorithms are considered for unconstrained, linearly constrained, and nonlinearly constrained models. Prereq: MATH 4320.


**C SC 5682-3. Expert Systems.** This course reviews and analyzes many expert systems documented in the literature, such as MYCIN, MACSYMA and XCON. Emphasis is given to the design of rule-based systems, the use of uncertain and incomplete information and system shells. Prereq: C SC 5582.

**C SC 5728-3. Software Engineering.** First-hand study of problems connected with the development of large programs. Small groups of students will be involved in the analysis and design of large software projects. Prereq: C SC 3401 and 3415.

**C SC 5890-5899-1 to 9. Special Topics.** (Master’s level) These courses cover recent developments in an aspect of computer science, such as neural networks, complexity theory, database systems, and advanced parallel processing. For graduate students only. Prereq: permission of instructor.

**C SC 5840-1 to 8. Independent Study.** For graduate students majoring in computer science.

**C SC 5950-1 to 8. Master’s Thesis.**

**C SC 6531-3. Parallel Computation and Architectures.** This course will examine a range of topics involved in using parallel operations to improve computational performance. Parallel architectures, parallel algorithms, and parallel programming languages will be discussed. Interconnection networks and their relations to specific computer architectures will be covered. Prereq: graduate standing and MATH 4650 or C SC 4656.

**C SC 6950-1 to 10. Doctoral Thesis.**

**Electrical Engineering**

**Chair:** Vacant

**Staff Assistant:** Christy Mourning

**Electrical Engineering Office:** NC 2615

**Telephone:** 556-2872

**Faculty:** Professors: Jochen Edrich, Pinkaj K. Sen, Joe E. Thomas

**Associate Professors:** Marvin F. Anderson, Jan Biaslaiswicz, Douglas A. Ross

**Assistant Professors:** Miloje Radenkovic

**Senior Instructors:** Brian E. Atkinson, Valentine E. Riegert, Richard O. Taylor

**Associate Professor Adjunct:** William E. Roemish

**Emeritus:** Paul F. Hultquist, Edward T. Wall, William D. Murray

The professional possibilities in electrical engineering include teaching and research in a university; research and development of new electrical or electronic devices, instruments, systems, or products; design of computers, computer interfaces, communications and control systems, or power systems and machines; production and quality-control of electrical products or systems for private industry or government; and sales or management for a private firm or branch of government.

The electrical engineering course of study begins with principles of physics,
chemistry, mathematics, and computers, then follows with intensive training in the theory and laboratory application of logic and electrical circuits, electromagnetic fields, transmission theory, linear systems, electrical machines and transformers, and electronics and microprocessors. Throughout the entire course of study, students reinforce their understanding of theory through laboratory experience and extensive design projects.

**UNDERGRADUATE CURRICULUM**

The curriculum in electrical engineering begins with a solid foundation in mathematics and basic science. Following this, the curriculum includes breadth of background in the engineering science areas traditionally included in electrical engineering programs. The design content of the curriculum is contained in many of the required junior courses and all of the required/elective senior courses.

Students should supplement this information about the curriculum by consulting a copy of the EE Printed Advisement Guide which may be obtained in the EE department office located in NC 2615. The EE Printed Advisement Guide contains the latest information concerning the curriculum as well as guidelines and procedures with which each student should be familiar. To be awarded the B.S. degree in electrical engineering a student must have at least a 2.0 average in all courses applied to the degree. In addition, a student must maintain at least a 2.0 average in all electrical-engineering and computer-science courses attempted. Appointments to see any of the departmental advisors may be made by calling the EE office, (303) 556-2872.

**Combined Degree Options**

More specific information on combined degree requirements may be obtained from the EE office, (303) 556-2872.

**Typical Curriculum for B.S. (Electrical Engineering)**

**FRESHMAN YEAR**

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1401, Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 1130, Engineering General Chemistry (see note 1)</td>
<td>5</td>
</tr>
<tr>
<td>EE 1510, Logic Design</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 1020, Writing Workshop II (see note 2)</td>
<td>3</td>
</tr>
<tr>
<td>H&amp;SS Core Course (see note 2)</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>

**Second Semester**

| MATH 2410, Analytic Geometry and Calculus III for Engineers | 3 |
| PHYS 2311, General Physics I | 4 |
| PHYS 2321, General Physics Lab. I | 1 |
| CSC 1410, Fundamentals of Computing I | 3 |
| CMMU 2101, Speechmaking (see note 2) | 3 |
| H&SS Core Course (see note 2) | 3 |
| **Total** | **17** |

**SOPHOMORE YEAR**

**First Semester**

| MATH 2420, Analytic Geometry and Calculus III for Engineers | 3 |
| MATH 3191, Applied Linear Algebra | 3 |
| PHYS 2331, General Physics II | 4 |
| EE 2132, Circuit Analysis I | 4 |
| EE 2532, Sophomore Lab. I | 1 |
| ENGL 2024 or 3154 (see note 2) | 3 |
| **Total** | **18** |

**Second Semester**

| MATH 3200, Elementary Differential Equations | 3 |
| Physics elective (see note 3) | 3 |
| EE 2142, Circuit Analysis II | 3 |
| EE 2542, Sophomore Lab. II | 1 |
| CSC 2525, Assembly Language and Computer Organization | 3 |
| H&SS Core Course (see note 2) | 3 |
| **Total** | **16** |

**JUNIOR YEAR**

**First Semester**

| EE 3133, Electromagnetic Fields I | 3 |
| EE 3215, Electronics I | 3 |
| EE 3715, Electronics Lab I | 1 |
| EE 3316, Linear Systems Theory | 3 |
| EE 3164, Energy Conversion | 3 |
| EE 3724, Power Lab | 1 |
| H&SS Core Course (see note 2) | 3 |
| **Total** | **17** |

**Second Semester**

| EE 3143, Electromagnetic Fields II | 3 |
| EE 3225, Electronics II | 3 |
| EE 3651, Digital Hardware Design | 3 |
| EE 3735, Junior Lab | 2 |
| MATH 3800, Introduction to Probability | 3 |
| H&SS Core Course (see note 2) | 3 |
| **Total** | **17** |

**SOPHOMORE YEAR**

| EE 3133, Electromagnetic Fields I | 3 |
| EE 3215, Electronics I | 3 |
| EE 3715, Electronics Lab I | 1 |
| EE 3316, Linear Systems Theory | 3 |
| EE 3164, Energy Conversion | 3 |
| EE 3724, Power Lab | 1 |
| H&SS Core Course (see note 2) | 3 |
| **Total** | **17** |

**First Semester**

| MATH 2420, Analytic Geometry and Calculus III for Engineers | 3 |
| MATH 3191, Applied Linear Algebra | 3 |
| PHYS 2331, General Physics II | 4 |
| EE 2132, Circuit Analysis I | 4 |
| EE 2532, Sophomore Lab. I | 1 |
| ENGL 2024 or 3154 (see note 2) | 3 |
| **Total** | **18** |

**Second Semester**

| EE Specialty (see note 4) | 6 |
| EE 4319, Senior Design | 3 |
| Professional elective (see note 7) | 3 |
| **Total** | **17** |

**Notes for B.S. (Electrical Engineering)**

All students must satisfy this curriculum if their graduation date is May 1994 or later. Students graduating prior to May 1994 may be allowed to satisfy different humanities, social sciences, and communication requirements from those shown above; students should check with departmental advisors to determine their degree requirements. The particular curriculum to be satisfied by each student is the one published in the catalog current at the time of his/her 30-hour senior check-out. A graduation agreement should be requested by each student after completing registration for his/her last semester. Additional information is contained in the EE Printed Advisement Guide available in the EE department office located in NC 2615.

Students should refer to the section in this catalog on Academic Policies of the College of Engineering and Applied Science. In addition to planning for sequences of courses based on prerequisites, students should plan to complete sophomore level courses before taking junior level courses and should have completed their junior level EE courses before starting their senior level EE electives.

1. Or CHEM 2031 and 2038.
2. Common Core Requirements of the College of Engineering and Applied Science are outlined in the section titled Undergraduate Core Curriculum in Engineering in this catalog or in the EE Printed Advisement Guide. In the Communications area students must pass ENGL 1020, Writing Workshop II, with a C or better prior to taking EE 2142, Circuit Analysis II, and EE 2542, Sophomore Lab II; CMMU 2101, Speechmaking, must be passed prior to taking EE 3735, Junior Lab.
3. The following courses may be taken to satisfy the physics elective requirement: PHYS 2811, Modern Physics; PHYS 3211, Analytical Mechanics; or PHYS 3411, Thermal Physics. If PHYS 3211 is taken, the required engineering
science elective (see note 8) is ENGR 3012, Thermodynamics; if PHYS 3411 is taken, the required engineering science elective is CE 3131, Applied Mechanics.

4. For the EE specialty courses, a student must take 3 of: EE 4136, Control Systems Analysis (or EE 4276, Digital Control Systems); EE 4184, Power Systems Analysis (or EE 4174, Industrial Power Electronics); EE 4225, Advanced Electronics; EE 4247, Communication Theory; or EE 4591, Computer Systems Design.

5. All EE students must satisfactorily complete the EE 4309, Senior Design Seminar, and EE 4319, Senior Design Project courses, in succeeding semesters.

6. The senior EE lab elective requirement may be satisfied by taking two of the following labs, not in the same area: EE 4406-2(S), Control Systems Lab; EE 4411-2(D), Computer Lab; EE 4423-2(F), Microwave Lab; EE 4435-2(E), Advanced Electronics Lab; EE 4444-2(P), Power Systems Lab; EE 4453-2(F), Electro-Optics Lab; or EE 4467-2(C), Communications Lab. Students should consult with departmental advisors to assure that the total design content of the senior laboratory courses selected is at least three (3) semester hours. This design content must be satisfied by all students graduating May 1992 or later.

7. Professional electives are to be selected from approved upper-division courses in business, computer science, engineering, mathematics, physics, or cooperative education. Students should consult the EE department for information regarding a few upper-division courses that are not allowed as professional electives.

8. The engineering science elective may be satisfied by taking either of the following courses: CE 3131, Applied Mechanics, or ENGR 3012, Thermodynamics. If ENGR 3012 is chosen as the engineering science elective, then the physics elective must be fulfilled by either PHYS 2811, Modern Physics, or PHYS 3211, Analytical Mechanics; if CE 3131, Applied Mechanics, is chosen as the engineering science elective, then the physics elective must be fulfilled by either PHYS 2811, Modern Physics, or PHYS 3411, Thermal Physics.

Graduate:

Requirements for Admission

A student wishing to pursue graduate work in electrical engineering should read carefully the Requirements for Advanced Degrees section in this catalog, and also should obtain a copy of the specific degree requirements by writing to Graduate Admissions, Department of Electrical Engineering, University of Colorado at Denver, Campus Box 110, P.O. Box 173364, Denver, CO 80217-3364.

Courses


E E 2532-1. Sophomore Laboratory I. Basic electrical circuit measurements and experimentation using oscilloscopes, various meters, and function generators. Experiments in digital logic analysis and design. Prereq or coreq: E E 2132; prereq: E E 1510.


E E 3133-3. Electromagnetic Fields I. Maxwell's equations postulated for free space and developed for material regions; boundary conditions. Uniform plane waves, static and quasi-static electric and magnetic fields. Prereq: E E 2142 and MATH 3200 (or MATH 3020).


E E 3316-3. Linear Systems Theory. Analysis of linear systems by the use of transfer functions, impulse response, step-function response, and convolution. Consideration of both continuous and discrete systems using linear differential equations and linear difference equations as models. Applications to electric circuits and systems. Transform techniques including the bilateral Laplace transform, Fourier transform, and Z-transform. Introduction to state-variable methods for both continuous and discrete systems. Prereq: E E 2142 and MATH 3200 (or MATH 3020).

E E 3651-3. Digital Hardware Design. The specification and design of digital hardware using medium scale, large scale, and very large integrated circuits. Technology of TTL, MOS, and ECL logic families. Combinational and sequential logic. Prereq: C SC 2525 and E E 3215.

E E 3715-1. Electronics Laboratory. Design and experimental verification of the operation of filter circuits, power supply circuits, transistor amplifier circuits and FET circuits. Prereq: E E 2142; prereq or coreq: E E 3215.

E E 3724-1. Power Laboratory I. Basic electro-mechanical energy conversion concepts as applied to the synchronous machine, induction machine and D.C. machine; the transformer; applications. Prereq: E E 2542. Prereq or coreq: E E 3164.

E E 3735-2. Junior Laboratory. Design and measure: several nonlinear op-amp circuits, a single-stage amplifier, and a complementary-symmetry output stage. (The design credit in this lab is 1 cr. hr.) Prereq: E E 3715 and CMMU 2101. Prereq or coreq: E E 3225.

E E 3939-1 to 3. Cooperative Education. Faculty/employer supervised employment in industry. Enrollment is limited to students who fully complete a Contract for Cooperative Education Credit by the last
day of the drop/add period. Prereq: E E 2142.
E E 4247-3. (C) Communication Theory. Introduction to the principles of traditional analog and modern digital communication systems. The spectral density of random signals is used to compare the noise performance of AM, FM, and various digital modulation methods such as phase shift keying. Discussion of information and the channel capacity of transmission systems. Prereq: E E 3316 and MATH 3800.
E E 4309-2. Senior Design Seminar. The focus is the design process itself. Included are economic and reliability considerations. Students are formed into design groups. Each group works with the project’s sponsor to organize the project and agree upon its specifications. A written report is required of each student.

E E 4319-3. Senior Design Project. Completion of the design project initiated in E E 4309 including written and oral presentations. Prereq: E E 4309 in the previous semester.
E E 4406-2. (S) Control Systems Laboratory. Independent design projects in servo-system control. Design of PID position and velocity controllers by classical methods. Design of modern control systems using digital computer. (The design credit in this lab is 2 cr. hrs.) Prereq: E E 3225; prerequisite or coreq: E E 3735 and 4136 (or 4276).
E E 4411-2. (D) Computer Systems Laboratory. This laboratory provides students with experience in the use of microprocessors as components in larger systems. Topics include microprocessor logical organization, interfacing, timing, and programming. (The design credit in this lab is 1.5 cr. hrs.) Prereq: E E 3225, 3735, and 3651.
E E 4423-2. (F) Microwave Laboratory. Microwave design and matching of coaxial and guide devices, transmission lines, and systems. Devices include attenuators, directional couplers, antennas, ferrites, detectors, mixers, oscillators, and amplifiers. Systems are represented by modern x-band transceivers and multiband satellite systems. Project in microwave computer-aided design of microwave transistor amplifiers. (The design credit in this lab is 1.5 cr. hrs.) Prereq: E E 3143, 3225, and 3735.
E E 4435-2. (E) Advanced Electronics Laboratory. Projects related to digital logic, analog and digital switches, A/D and D/A converters, and design of signal filters. (The design credit in this lab is 2 cr. hrs.) Prereq: E E 3225 and 3735; prerequisite or coreq: E E 4225.
E E 4444-2. (P) Power Systems Laboratory. Power laboratory system utilized to investigate the design, testing, and operation of standard distribution system apparatus, including synchronous machines, induction machines, transformers, power rectifiers, circuit breakers, fuses, and instrumentation. Preparation of a report on a power systems related topic and oral presentation to class. Tours of local power facilities and class presentations by local power system engineering students. (The design credit in this lab is 1.0 cr. hr.) Prereq: E E 3164 and 3724; coreq: E E 4184 (or 4174).

E E 4453-2. (F) Electro-Optics Laboratory. Lasers, light emitters, detectors, polarization effects upon reflection and refraction. Diffraction, interference, imaging, spatial filtering. Optical modulation, detection. Projects are selected from fiber optics, electro-optical system, optical communications, acousto-optical effects. (The design credit in this lab is 1.0 cr. hr.) Prereq: E E 3143, 3316, and 3735.
E E 4467-2. (C) Communications Laboratory. Analysis and design in three main areas: traditional analog communications at low and medium frequencies, digital communications, and microwave communications systems. Extensive use of spectrum analysis from low frequencies up to microwave range. Projects include noise, AM, FM, PM, PLL, sampling, quantizing, encoding, TDM, FSK, QPSK, 16QAM, receivers, and satellite communications systems. (The design credit in this lab is 1.5 cr. hrs.) Prereq: E E 3225, 3735, and 3316.

E E 4800-4839-1 to 3. Special Topics. E E 4840-1 to 3. Independent Study. An opportunity for students to do independent, creative work. Prereq: consent of instructor.
E E 4939-1 to 3. Cooperative Education. Faculty/employer supervised employment in industry. Enrollment is limited to students who fully complete a Contract for Cooperative Education Credit by the last day of the drop/add period. Prereq: E E 3735.

GRADUATE COURSES

The department offers between 10 and 12 graduate courses each fall and each spring. Check the department office for a tentative listing of offerings for future semesters.

Note: Most 5000-level graduate courses are open to top qualified undergraduates who may use these courses as professional electives in the curriculum.

To register for 5000-level courses, an undergraduate must be a senior with a B average or have consent of the department.
E E 5134-3. (F) Electromagnetic Radiation. Incoherent radiation, including the black body radiation law, is studied first, concluding with derivation of some of the fundamental antenna laws. Radiation from electrical charge in motion is considered next. Then these concepts are specialized to broadly applicable formulations for radiation and impedance characteristics of several types of antennas and antenna systems. Prereq: E E 3143 or equivalent.
E E 5163-3. Microwave Devices and Systems. Circuit theory is applied to waveguide systems containing filters, and other
passive devices for micro- and millimeter waves. Non-reciprocal ferromagnetic devices like circulators and isolators are treated. Non-linear microwave components include Schottky barriers, avalanching, and tunneling in the semiconductors and superconductors. Manley Rowe equations are solved for active varactor devices like paramps and converters.

Design concepts of microwave systems for bioelectromagnetics, satellite communications, radar and radiometry. Prereq: E E 3143.


E E 5220-3. Methods of Engineering Analysis I. (M E 5120.) Selected topics from real analysis with applications to engineering analyses. Topics include ordinary differential equations, special functions, partial differential equations, and boundary value problems. Prereq: graduate standing or consent of instructor.

E E 5230-3. Methods of Engineering Analysis II. (M E 5130.) Selected topics in complex analysis with applications to engineering analysis. Topics may include basics of complex variables, complex functions, complex integration, conformal transformations with applications as appropriate. Prereq: graduate standing or consent of instructor.


E E 5466-3. (S) Adaptive Control System Design. Basic concepts in adaptive feedback control. Overview of application areas. Elements of stability analysis and hyperstability approach to the design of adaptive systems. Positivity concept. Topics in modern adaptive control such as model reference adaptive systems, self-tuning regulators, adaptive control of uncertain plants, and neurodynamic adaptive systems. Emphasis will be placed on design projects. Prereq: E E 4136 (or 4276).

E E 5476-3. Optimal Systems Control. The continuous and discrete variational calculus, the maximum principle, and the Hamilton-Jacobi theory will be studied. The optimal state estimation and combined estimation and control, such as the linear quadratic Gaussian problem, will be presented. Optimal system control problems will be treated. Prereq: E E 4136 (or 4276).


E E 5511-3. (D) Hardware-Software Interface. Computer engineering methods in hardware and software design applied to problems drawn from the mini- and microcomputer systems field. Hardware and software techniques will be compared and related, and general techniques for the design of a combined hardware/software system will be developed. Interface between the computer system and external devices will be developed. Real time programming techniques will be considered. Prereq: E E 3651 or 4411.

E E 5531-3. Fundamental Concepts of Programming Languages. (C SC 5535.) Studies the structure and design of imperative and functional programming languages; datatypes, control flow, parameter passing, type equivalence, syntactic structure. Examples are drawn from 'C', Pascal, Modula-2, ADA, and LISP. Prereq: C SC 3401 and 3415.


E E 5571-3. (D) Operating Systems. (C SC 5573.) Investigates the logical design and organization of operating systems, and the interactions of their components. Topics will include I/O devices, file systems, scheduling, memory management, deadlock, and concurrent program constructs and languages. Prereq: C SC 3401 and 3415.

E E 5581-3. Artificial Intelligence. (C SC 5582.) The design of machines and systems created to perform tasks that are considered to require intelligence. Languages for artificial intelligence programming, expert systems, sensors and patterns, and applications are considered. Prereq: C SC 5552.

E E 5591-3. (D) Advanced Computer Architecture. (C SC 5593.) A broad-scope treatment of the important concepts in the structural design of computer systems will be covered by studying unique features of several key computer systems. Techniques used in supercomputers and a number of advanced architectures will be studied in depth. Prereq: C SC 4591.


E E 5657-3. (C) Detection and Extraction of Signals from Noise. Introduction to detection and extraction methods used in signal processing. Decision theory, detection of known and random signals, optimum receiver design, estimation theory. Wiener filtering. Kalman-Bucy filtering, applications to communication systems. Prereq: E E 5617.

E E 5687-3. Optical Communication Systems. Systems aspects of optical communication system design. Basic principles of sources, channels, detectors, counting statistics, amplifiers, and coding with regard to the performance limitations they place on the communication system. Prereq: E E 3143, 4247; E E 5617 recommended.


E E 5724-3. Energy Systems Analysis II. Application of symmetrical components to faults on transmission systems, determination of system constants, measurement of sequence quantities, relaying philosophies, power-flow studies; computer methods in power systems. Prereq: E E 4184.


E E 5800-583X-1 to 3. Special Topics. Intermediate courses of variable title and variable credit, offered once by guest lecturers. See current departmental notices for details.

E E 5840-1 to 6. Independent Study. Affords an opportunity for students to do independent, creative work. Prereq: consent of instructor.


E E 7800-7839-1 to 3. Special Topics. Courses of variable title and variable credit, usually offered once by guest lecturers. See current departmental notices for details.

E E 7840-1 to 6. Independent Study. Affords an opportunity for students to do independent, creative work. Prereq: consent of instructor.


Mechanical Engineering

Chair: R. Wayne Adkins
Staff Assistant: Faye Waitman
Office: NC 3502
Telephone: (303) 556-8516
Associate Professor: Richard S. Passamanek
Assistant Professor: L. Rafael Sanchez
Emeritus: B. Thomas Arnb erg

UNDERGRADUATE

The mechanical engineer is a professional person concerned with satisfying the needs of society using a combination of material, human, and economic resources. Mechanical engineering covers a very wide spectrum of activities in the engineering profession. These activities include the conversion and transmission of energy and associated power processes; the kinematic, dynamic, strength, and wear considerations as well as economic aspects of the development, design and use of machines and processes; and the analysis, synthesis, and control of entire engineering systems.

The mechanical engineering curriculum begins with a strong emphasis on mathematics, physics, and chemistry. It continues with a concentration in engineering sciences including solid and fluid mechanics; thermodynamics, heat and mass transport; materials; and systems analysis and control. It concludes with laboratory and design courses which demonstrate the ways in which scientific knowledge is applied in the design and development of useful devices and processes.

The mechanical engineering program may be roughly subdivided into two-year groupings. In the first two years, the program emphasizes the fundamentals of mathematics and basic science that are essential for an understanding of most branches of professional engineering. In the last two years of the program, the department emphasizes engineering science and design and provides technical electives in the following areas:

- Thermodynamics
- Heat Transfer
- Fluid mechanics
- Solid mechanics
- Power
- Dynamics and controls
- Design
- Thermomechanical systems

To be awarded the B.S. (M.E.) a student must satisfy all University graduation requirements.
requirements and maintain at least a 2.0 in all mechanical engineering courses. All students are required to set up an appointment with the senior check-out advisor before registering for the last 30 hours of their degree program.

**TYPICAL CURRICULUM FOR B.S. (Mechanical Engineering)**

**FRESHMAN YEAR**

**First Semester**  
Semester Hours  
MATH 1401. Analytic Geometry and Calculus I  
CHEM 1130. Engineering General Chemistry (see note 1)  
ENGR 1025. Graphics and Computer Aided Design  
H & S Core Courses (see note 2)  
Total  
**Second Semester**  
MATH 2410. Calculus II for Engineers  
PHYS 2311. General Physics I  
PHYS 2321. General Physics Lab I  
CSC 1100. Computing with FORTRAN  
ENGL 1020. Writing Workshop II (see note 3)  
H & S Core Course (see note 2)  
Total

**SOPHOMORE YEAR**

**First Semester**  
Semester Hours  
MATH 2420. Calculus III for Engineers  
MATH 3191. Applied Linear Algebra  
PHYS 2331. General Physics II  
PHYS 2341. General Physics Lab II  
ME 2023. Statics (see note 4)  
CMMU 2101. Speechmaking (see note 3)  
Total  
**Second Semester**  
MATH 3200. Elementary Differential Equations  
ENGR 3012. Thermodynamics  
ME 2033. Dynamics (see note 4)  
EE 3030. Electric Circuits and Systems  
ENGL 2024. Intermediate Composition or ENGL 3154. Technical Writing  
H & S Core Course (see note 2)  
Total

**JUNIOR YEAR**

**First Semester**  
Semester Hours  
ME 3024. Introduction to Materials Science I  
ME 3022. Thermodynamics II  
ME 3017. Measurements  
ME 3020. Engineering Systems  
ME 3043. Strength of Materials  
ME 3034. Properties of Engineering Materials Laboratory  
H & S Core Course (see note 2)  
Total

**Second Semester**  
ME 3037. Measurements Laboratory  
ME 4024. Mechanical Behavior of Materials  
ME 3123. Vibration Analysis  
ME 3065. Introduction to Mechanisms  
ME 3021. Introduction to Fluid Mechanics  
ME 3031. Fluids/Thermal Laboratory  
H & S Core Course (see note 2)  
Total

**SENIOR YEAR**

**First Semester**  
Semester Hours  
ME 3042. Heat Transfer  
ME 4026. Control Systems Design  
ME 4025. Mechanical Engineering Design I  
ME Design Elective  
ME Technical Elective (see note 5)  
ENGR 4000. Senior Seminar  
Total  
**Second Semester**  
ME 4035. Mechanical Engineering Design II  
ME 4027. Mechanical Engineering Lab  
ME Design Electives (see note 5)  
H & S Core Course (see note 2)  
Total

**Notes for B.S. (Mechanical Engineering)**

All students must satisfy this curriculum if their graduation is May 1994 or later. Students graduating prior to May 1994 may have to satisfy different humanities, social sciences, and communication requirements than those shown above. Students should check with departmental advisors to determine their degree requirements. The particular curriculum to be satisfied by each student is the one published in the catalog current at the time of their 30-hour senior checkout. For additional information see your departmental advisor.

Students should refer to the section in this catalog on Academic Policies of the College of Engineering and Applied Science. In addition to planning for sequences of courses based on prerequisites, students should plan to complete sophomore level courses before taking junior level courses and should have completed their junior level ME courses before starting their senior level ME electives. All students should see their advisors at least once each semester.

**GRADUATE**

The Department of Mechanical Engineering offers graduate courses and a Master of Engineering degree program. The degree of Master of Engineering, and Ph.D. in Mechanical Engineering are offered through a coordinated program with the Department of Mechanical Engineering, University of Colorado at Boulder. The areas of research interest in which a student may undertake studies at CU-Denver include manufacturing processes, fluid mechanics, solid mechanics, heat transfer, bioengineering, thermodynamics, and mechanical design.

**Degree Requirements**

At the M.S. degree level, students following Plan I (24 hours of formal coursework plus 6 hours of thesis) are required to take 9 hours of core courses which include engineering analysis and a selection from thermodynamics, mechanics, and design. Students following Plan II 1. CHEM 2031 and 2038 may be substituted.

2. Common Core Requirements of the College of Engineering and Applied Science. Refer to Humanities and Social Sciences Component of the Engineering Curriculum in this catalog or to the Common Core Requirements guide available from your advisor for further information. Twenty-one (21) credit hours are required in Social Sciences (a six-hour sequence), Behavioral Science (three hours), Humanities (a six-hour sequence), and an upper level Multicultural Diversity course (three hours in one of the disciplines selected for the above six-hour sequences).

3. The communications requirements include ENGL 1020, Writing Workshop II, ENGL 2101, Speech Making, and a third elective course selected from either ENGL 2024, Intermediate Composition, or ENGL 3154, Technical Writing.

4. CE 2121 and 3111 may be substituted for ME 2023 and 2033.

5. Three design electives must be selected from ME 4132, Thermal Systems Design, ME 4135, Mechanical Systems Design, ME 4136, Control Systems Design, ME 4142, Power Plant Design, or ME 4155, Air Conditioning Design. A list of approved technical electives is maintained in the ME department office located in NC 3502. The design content of each course is indicated. The department will offer at least one technical elective with a full three-hour design credit each semester.
(30 hours of formal course work) are required to take 15 hours of core courses in thermodynamics, elasticity or fluid mechanics, dynamics, and engineering mathematics. The remainder of the program is developed by the student in consultation with the advisor.

For admission to Ph.D. candidacy the student must pass a comprehensive examination to demonstrate a general competence in mechanical engineering at an advanced level. In addition, second-year, college-level reading proficiency must be demonstrated in scientific French, German, Russian, or other foreign language approved by the department upon petition by the student.

Courses

ME 1208-12X8-1 to 3. Special Topics. (C E 2023-3.) A vector treatment of force systems and their resultants; equilibrium of trusses, beams, frames, and machines, including internal forces and three-dimensional configurations; static friction; properties of areas; distributed loads; hydrostatics. Prereq or coreq: ENGR 2311 and 2321.

ME 3031-1. Fluids/Thermal Laboratory. Laboratory exercise in compressible and incompressible fluid flow; steady state and transient heat transfer. Coreq: M E 3021; prereq: M E 3022.

ME 3034-1. Properties of Engineering Materials. Experiments to determine material properties and the effect of processing on properties important in mechanical design. Materials include metal, polymers, and composites. Loadings include tension, compression, and bending under static, dynamic, impact, and creep states. Prereq or coreq: M E 3043 or 3024.

ME 3037-2. Measurements Laboratory. Self-paced, open laboratory, providing hands-on experience. Includes a variety of instruments and components illustrating fundamental experimental concepts for measurement systems. Prereq: ENGR 3012.

ME 3042-3. Heat Transfer. Basic laws of heat transfer by conduction, convection, and radiation; with engineering design applications. Includes design project. Prereq: ENGR 3012.


ME 3147-3. Bioengineering. This course explores engineering principles that have application in biology, and principles discovered in biology which may have application in engineering. Some topics and fields covered are: cell biology, molecular biology, viscoelasticity, physical theory of plant cell growth, aerodynamics, fluid mechanics, biofluid dynamics, and animal flight. Prereq: junior standing in engineering.

ME 3208-32X8-1 to 3. Special Topics. Subject matter to be selected from topics of current technological interest. Credit to be arranged. Prereq: consent of instructor.


ME 4025-3. Mechanical Engineering Design I. Review of mechanics of materials and stress analysis; detailed design of various machine elements such as fasteners, springs, brakes and gears. Includes design project. Prereq: M E 3043.


ME 4027-3. Mechanical Engineering Laboratory. Students perform individual projects encompassing designs and reporting. Oral reports are given bi-weekly and a final written report is required. Prereq: M E 3022; coreq: M E 3037.

ME 4055-3. Mechanical Engineering Design II. Group and individual projects to design engineering components and systems. Design methodology, product specifications, creativity, design reviews, communication, presentations, and report writing are emphasized. Prereq: M E 4025.


ME 4114-3. Designing with Composites. This course deals with the analysis and design of polymers and polymer based composites. Failure criterion include static strength, stiffness, creep, fatigue, impact, and fracture toughness. Design criteria include strength-to-weight ratio, cost-to-strength ratio, etc. Prereq: M E 3043.

ME 4116-3. Robotics. Introduction to kinematics, dynamics and control of robot manipulators. Emphasis is placed on computer use in control of actual robots
and in computer simulation of mathematical models of robots. Students must turn in a project report based on the computer simulation. Prereq: Pascal or FORTRAN and senior standing.


M E 4121-3. Fluid Mechanics. Viscous incompressible fluid flows. Topics include derivation of equations governing viscous compressible fluid motion; specializations to simple flows; boundary-layer theory; similarity solutions; introduction to turbulence and Reynolds stresses. Prereq: M E 3021.

M E 4122-3. Air Conditioning. Thermodynamic laws of water vapor and air mixtures; basic principles of heating and ventilating; determination of heating and cooling loads; design of heating and cooling systems. Includes design project. Prereq or coreq: M E 3042.

M E 4130-3. Analytical Methods of Engineering II. Foundations of complex analysis applied to engineering problems. Subjects may include complex functions, complex series, complex integration (contour integration), conformal transformations, and selected applications. Prereq: MATH 3020 (or 3191 and 3200), or consent of instructor.


M E 4135-3. Mechanical Systems Design. Detailed engineering design of mechanical systems. Students work in teams on a project selected for entire class. Projects are similar to typical ones from industry. Course stresses creativity, synthesis, design judgment, and analysis of real world problems. Oral and written presentations are required. Prereq: M E 4026.

M E 4142-3. Thermal Systems Design. Detailed engineering design of thermal/fluids systems. Students work in teams on a project selected for entire class. Projects are similar to typical ones from industry. Course stresses creativity, synthesis, design judgment and analysis of real world problems. Oral and written presentations are required. Prereq: ENGR 3012, M E 3021.

M E 4143-3. Advanced Dynamics. Brief review of Newtonian dynamics, Lagrange's equations for particles, systems, and rigid bodies. Conservative and non-conservative systems, moments of inertia, principal axes, angular momentum, Euler equations. Illustrations from spinning bodies including tops, gyro-compass, and rotating machinery. Prereq: M E 2033 or equivalent and MATH 3020 (or 3191 and 3200).


M E 4160-3. Introduction to Operations Research. Introduction to operations research including mathematical programming models, models for decision alternatives and for procurement and inventory and also for queuing operations. Prereq: MATH 3020 (or 3191 and 3200).


M E 4182-3. Combustion Phenomena. The multicomponent fluid equations of motion and chemical thermodynamics are used to study a variety of combustion problems. These include droplet and particle combustion, boundary layer combustion, detonation and deflagration wave theory, topics related to internal combustion engines, liquid and solid rockets. Prereq: M E 3022.

M E 4208-42X8-1 to 3. Special Topics. Subject matter to be selected from topics of current technological interest. Credit to be arranged. Prereq: consent of instructor. Prereq: senior standing.

Note: Courses at the 5000 level are open to qualified seniors subject to departmental approval. Not all graduate courses are offered each year.


M E 5120-3. Methods of Engineering Analysis I. (E E 5220.) Selected topics from real analyses with applications to engineering analyses. Topics include ordinary differential equations, special functions, partial differential equations and boundary value problems. Prereq: graduate standing or consent of instructor.

M E 5121-3. Introduction to Fluid Dynamics. Physical properties of gases and liquids; kinematics of fluid flows; equations describing viscous, heat conducting Newtonian fluids. Exact solutions and rational approximations for low and high speed dissipative flows, surface and internal waves, acoustics, stability, and potential flows. Coreq: M E 5120 and 5123 or equivalent.

Applications to stability, phase equilib­rium, electric and magnetic work. Irre­versible thermodynamics and the Onsager reciprocal relations. Prereq: undergraduate thermodynamics.


M E 5124-3. Yield-Limited Behavior of Materials. Analysis of material behavior within the “elastic range” with emphasis on the phenomenon of yield and factors that influence it. Introduction to the theory of elasticity; examination of the theory of dislocations; study of strengthening mechanisms in solids. Consideration of various time-dependent but reversible (inelastic) deformation phenomena. Present­ation of appropriate engineering case studies to augment various topics. Prereq: M E 4024 or equivalent.

M E 5130-3. Methods of Engineering Analysis II. (E E 5230.) Selected topics in complex analysis with applications to engineering analysis. Topics may include basics of complex variables, complex functions, complex integration, conformal transformations with applications as appropriate. Prereq: graduate standing or consent of instructor.


M E 5144-3. Plasticity and Creep. Inelastic deformation of materials such as metals, alloys, glasses, composites, polymers, etc., from the phenomenological and structural point of view. Case studies of plastic and creep deformations in engineering materials. Prereq: M E 4024 or equivalent.


M E 5163-3. Dynamics. Elements of vector analysis, particle motion, kinematics of rigid body, rotating axes, rigid body motion, and Euler's equations and applica­tions. Introduction to analytical mechanics. Hamilton's principle, Lagrange's equations for holonomic and non­holonomic systems. Prereq: graduate standing or consent of instructor.


M E 5208-52X8-1 to 3. Special Topics. (Undergraduate.) This category is intended for upper division level special topics which students may wish to pursue on their own initiative, with guidance from a professor who agrees to limited consultation on the work and to award credit when the project is completed.

M E 5540-1 to 3. Independent Study. Available only through approval of the graduate advisor. Subjects arranged to fit needs of the particular student. Prereq: graduate standing.

M E 7840-1 to 3. Independent Study.

ENGINEERING—NON-DEPARTMENTAL

Undergraduate

The following courses are offered as required for the various degree programs (see the typical curricula for degree pro­grams as listed in previous College of Engi­neering sections).

Courses

ENGR 1208-12X8-1 to 3. Special Topics.
ENGR 2208-22X8-1 to 3. Special Topics.
ENGR 3012-3. Thermodynamics. An introduction to thermodynamic properties and state relationships; processes and cycles with work and heat transfer. Applications of the first and second laws to energy related engineering systems. Prereq: MATH 2421 and PHYS 2311.
ENGR 3208-32X8-1 to 3. Special Topics.
ENGR 4000-0. Senior Seminar. Offered each fall and spring semester. Required of all CE, EE, and ME majors graduating May 1990 and thereafter. Each student shall take the state administered engineer-in-training examination. Optional lectures to review topics covered on the E.I.T. Exam. This course must be taken in the semester prior to the semester of graduation. Prereq: senior standing.
ENGR 4208-42X8-1 to 3. Special Topics.
ENGR 4840-1 to 3. Independent Study.

Engineering, Master of

The Master of Engineering degree program is administered by the system-wide Graduate School through the departments of engineering. The requirements for admission and for quality and quantity of academic work are essentially the same as for the Master of Science degree awarded in the College of Engineering and Applied Science.

The principal difference between the Master of Engineering degree and the Master of Science degree is that the Master of Engineering is intended especially to meet the needs of those practicing engineers who wish to follow an integrated, interdisciplinary program of studies in engineering or in engineering and allied subjects related to the individual student's professional work. Examples of such interdisciplinary programs include engineering and business administration, engineering and social sciences, engineering and biological sciences, engineering and behavioral sciences, engineering and public administration. Appropriate non-engineering course work must be available on the campus where the student attends.

The degree will be especially valuable for continuing education programs for engineers in industry. It will provide a framework for such persons to work toward significant goals fitted to their particular interests. The program can include courses which are made available on video tape or on live television.

The Master of Engineering degree is not intended as a means to permit a random, unguided selection of courses. Each prospective student is required to present a well-defined objective in order to be admitted to the program. In consultation with the faculty advisors, an academic program is developed to meet this objective.

The admission of students to graduate study, the approval of their degree programs, admission to candidacy for the degree, and the approval of the awarding of a degree are to originate through a specific department of the College of Engineering and Applied Science, in the same manner as for the Master of Science program. An advisory committee will be appointed for all students by their department. The advisory committee guides the student, and is responsible for approving the individual's degree program and admission to candidacy; and approves the student's written report and the awarding of the degree.

DEGREE REQUIREMENTS

The requirements for the degree are 30 credit hours plus a written report on a creative investigation which may be related to the student's professional work. The report will be of the same general quality as that required for the Master of Science thesis and must be defended orally. It may be based upon work done for credit under independent study. At least 15 credit hours must be in engineering at the 5000 level or above. As many as 15 credit hours may be taken outside of engineering. Credit in courses below the 4000 level will not apply toward degree requirements.

Additional information about the degree may be obtained from the College of Engineering and Applied Science department offices.
The College of Liberal Arts and Sciences coordinates undergraduate programs with CU-Denver’s professional schools, through which it is possible to combine technical expertise with the broad critical and analytical skills essential to complex decision making. A dedicated faculty with strong academic credentials is committed to highly motivated students representing a broad range of age and experience. The curriculum of the College maintains traditionally high university academic standards while providing numerous flexible learning opportunities to meet the varied objectives of university students from the Denver metropolitan area.

The College’s programs strive to remain close to the needs of the community. The curriculum offers opportunities to study urban programs, confront contemporary issues, participate in off-campus working internships and, in general, make use of the resources of the city. Advisory committees from the community work with each department in the College to strengthen community ties. Cultural and historical efforts in Denver are supported and enhanced by academic programs in the College.

Many students enroll in the College of Liberal Arts and Sciences to study the liberal arts and participate in the general education associated with the B.A., B.S., or B.F.A. degree as an end in itself. After receiving a degree, some students decide to continue study at the graduate level. Others set aside further formal study and initiate careers. Because a liberal education provides a broad foundation in the problem-solving skills and substantive knowledge that can be widely applied, graduates of the College have careers in a variety of positions in industry, commerce, and government. Other students enroll in the College of Liberal Arts and Sciences specifically to prepare themselves for admission to a professional school such as business, education, law, or medicine.

The faculty of the College provide instruction at the undergraduate level through broad areas of knowledge. Each area of study offers a wide variety of curricula including traditional undergraduate major programs, interdisciplinary studies, and pre-professional programs. However, in addition to teaching knowledge and skills requisite to achievement in the disciplines of the liberal arts, the faculty of the College have the goals of instilling both the love of learning and the tolerance not to block the way of inquiry.

College of Liberal Arts and Sciences Educational Goals

The College of Liberal Arts and Sciences defines liberal education to include four major components:

1. Central elements of knowledge, including:
   A. knowledge of the diversity and significant dimensions of human culture and a specific understanding of American culture, including its political and ethnic diversity.
   B. aesthetic awareness and appreciation of the contributions made to the human experience by the culture contributions of music, theatre, literature and art.
   C. an understanding of the methods of inquiry and development of theory which are the basis of knowledge in the natural and physical sciences.

2. Essential skills for analysis, writing, computation, communication, and decision making.

3. The development of a constructive orientation toward society through the enhancement of the individual’s capacity to make informed and responsible choices based on reflective consideration of the democratic principles of due process, civil liberties and the balance between individualism and the common good.

4. The ability to apply knowledge of the arts and sciences to society’s specific needs.

The College works to instill in students an understanding of these components through required skills and core courses and through the knowledge and skills required by each major program in the College.
Undergraduate Programs

Students can earn baccalaureate degrees in the following areas:

Bachelor of Arts
- Anthropology
- Communication and Theatre
- Economics
- English
- Fine Arts
- French
- Geography
- German
- History
- Individually Structured
- Philosophy
- Political Science
- Psychology
- Sociology
- Spanish
- Writing

Bachelor of Science
- Fine Arts

Bachelor of Fine Arts
- Fine Arts

Bachelor of Science
- Biology
- Chemistry
- Geology
- Mathematics (includes computer science option)
- Music
- Physics

Individually structured majors are available for those students who desire a unique program tailored to meet a specific objective. Interested students should consult the College-wide Interdisciplinary Academic Programs section of this catalog and contact the College Advising Office, 556-2555, for program details.

The College also provides the necessary course work to prepare students for further study and careers in the following health science fields: child health associate, dental hygiene, dentistry, medical technology, medicine, nursing, optometry, osteopathy, pharmacy, physical therapy, podiatry, and veterinary medicine.

MINOR PROGRAMS

Most CU-Denver departments have developed minor programs. A minor program is not required for graduation. Students interested in completing a minor should contact the individual departments regarding requirements or the College Advising Office at 556-2555.

DOUBLE MAJORS

Students may graduate with more than one major by completing all requirements for each major.

SECOND DEGREES

Students who have been awarded a bachelor’s degree (either from the College or elsewhere) may be granted a second bachelor’s degree provided that (a) all general requirements for that degree have been met; (b) the major for the second bachelor’s degree is different from the major for the first; and (c) the College and major department residence requirements are satisfied.

DOUBLE DEGREES

Students may earn two degrees from two different schools or colleges of the University of Colorado simultaneously by fulfilling all requirements for both degrees. For example, the College of Business and the College of Liberal Arts and Sciences have a double-degree program leading to a B.S. in business administration and a B.A. in the student’s chosen major. The College of Liberal Arts and Sciences requires that a student complete at least 90 liberal arts credits and 150 total credits in order to be granted two bachelor’s degrees.

Students planning one of these multiple programs should consult with the College Advising Office at the earliest possible date in order to get approval for a double-degree program.

Graduate Programs

Graduate degree programs offered by the faculty of the College through the Graduate School include the following:

The Master of Arts (M.A.) in:
- Anthropology
- Biology
- Communication and Theatre
- Economics
- English
- History
- Political Science
- Psychology
- Sociology

The Master of Science (M.S.) in:
- Applied Mathematics
- Chemistry
- Environmental Science
- Technical Communications

The Master of Basic Science (M.B.S.)
The Master of Humanities (M.H.)
The Master of Social Science (M.S.S.)

Significant course work can be taken at the Denver campus in the following master’s degree programs:
- Fine Arts
- Geology
- Journalism
- Philosophy

The Doctor of Philosophy (Ph.D.) in:
- Applied Mathematics

Significant course work toward the doctorate is available at the Denver campus in the programs listed below. Students can be resident on the Denver campus studying in these areas in order to take advantage of the multi-campus activities of The Graduate School. It is usually advised that a student complete some course work at another campus of the University.
- Biology
- Chemistry
- Communication
- English
- Psychology

Requirements for Admission

NEW FRESHMEN

Students planning to enter the College of Liberal Arts and Sciences must meet the requirements described in the General Information section of this catalog under Admission Policies and Procedures.

Additionally, new freshmen must meet the College requirements for Minimum Academic Preparation Standards (MAPS) instituted by the University of Colorado. Students seeking admission to the College are required to satisfy 15 units of high school level courses in English, foreign language, mathematics, sciences, humanities, and social sciences. Students are eligible for admission to the College with up to two units of deficiency in a foreign language and no more than one additional deficiency in the remaining areas. The College will allow graduation credit toward the bachelor’s degree for courses satisfying MAPS deficiencies only if these courses are allowed for graduation credit under current College policy.

TRANSFER STUDENTS

Students who have attended another college or university are expected to meet general requirements for admission of transfer students as described in the General Information section of this catalog. Applicants who have been away from a college environment for a period of time will be considered on the basis of all factors available: high school record, test
scores, original college admission qualifications, college performance, and interim experiences that might suggest potential success in the College of Liberal Arts and Sciences. A maximum of 72 semester hours taken at a community college may be applied toward a bachelor's degree in the College.

MUSIC AUDITION

All entering freshmen and transfer students in music must complete an audition. Music students should contact the Department of Music, 556-2727, for audition applications.

Academic Policies

Students are referred to the General Information section of this catalog for a description of academic policies that apply to all undergraduate students at CU-Denver. The policies which follow apply specifically to the College of Liberal Arts and Sciences.

Music students should see the section on academic policies in the School of the Arts portion of this catalog.

CU-DENVER/MSCD POOLED COURSES

Most courses offered by the School of Letters, Arts, and Sciences at Metropolitan State College of Denver and by the College of Liberal Arts and Sciences at the University of Colorado at Denver form a common pool of resources available to students at both institutions. Credits earned in common pool courses that meet appropriate academic criteria will apply to the credits required for a bachelor's degree from either institution. Students should check with the College and departmental advisors to verify that common pool courses satisfy graduation requirements.

CU-Denver students must satisfy the following restrictions concerning common pool courses:
1. CU-Denver graduate students are not eligible to register for MSCD common pool courses.
2. MSCD courses will not be included in the University of Colorado grade-point average. MSCD courses will appear on the University of Colorado transcript and will count in the hours toward graduation.
3. MSCD common pool courses cannot be used to meet specific course requirements toward the major without written approval of the department chair.

4. MSCD common pool courses will not satisfy residence requirements at CU-Denver.

ACADEMIC ETHICS

Students are expected to conduct themselves in accordance with the highest standards of honesty and integrity. Therefore, the faculty assumes that term papers, reports, studio work, results of laboratory experiments, and examinations submitted by the student represent the student's own work. Students are referred to the Statement of Academic Honesty of the College of Liberal Arts and Sciences, available from the Office of the Dean, for guidance on generally acceptable limits on cooperation in the preparation of academic work, and for a discussion of what constitutes academic honesty.

Academic dishonesty, such as plagiarism or cheating, is a serious charge which, if substantiated, may result in course failure, probation, suspension, or expulsion from the University. The Academic Ethics Committee, composed principally of faculty and students, is charged by the faculty of the College with considering evidence in contested cases, determining guilt or innocence, and assessing penalties. Special rules of the committee, available from the Office of the Dean, have been designed to ensure due process.

ACADEMIC ADVICE AND INFORMATION

Students in the College are expected to assume responsibility for planning their academic programs in accordance with College policies and major requirements. To assist students, the College maintains a College Advising Office, NC 2024, 556-2555. Students are urged to consult with the staff of this office concerning individual academic problems and progress toward their degrees.

As soon as students have determined a major, they should meet with a department advisor. The department advisor will be responsible for the student's major advising and for certification of the completion of the major program for graduation.

Students planning to ultimately earn a degree from one of the professional schools should also see an advisor in that school.

ACADEMIC PROBATION AND SCHOLASTIC SUSPENSION

Good academic standing in the College requires a cumulative grade-point average (GPA) of 2.0 on all University of Colorado course work. Grades earned in another college or school within the University of Colorado system are used in determining the student's scholastic standing and progress toward the degree. However, grades earned outside the University of Colorado system are not used in calculating the grade-point average at the University of Colorado.

Academic Probation

Students whose cumulative grade-point average falls below a 2.0 at the end of an academic term will be placed on academic probation for the following semester. Students are informed in writing of scholastic probation. Students on academic probation will be required to achieve a minimum 2.2 grade point average each semester until their cumulative grade-point average is at least a 2.0, at which time students will be removed from probation.

Scholastic Suspension

Students on academic probation who do not meet the 2.2 minimum required grade-point average in the succeeding semester will be suspended from the College. Students are informed in writing of scholastic suspension.

In attempting to raise a grade-point average while suspended, a student may register for courses in the University of Colorado summer term on any campus, for correspondence study through the University, or for credit courses offered through the Division of Extended Studies.

First Suspension

The normal period of suspension is two regular semesters (one calendar year excluding summer term), after which the student must reapply and will be automatically readmitted on probation to the College of Liberal Arts and Sciences. The student must then meet all conditions for academic probation until the cumulative GPA reaches 2.0. Failure to do so will result in a second suspension.

A student under a first suspension may be readmitted before the end of the normal suspension period only if the student has demonstrated academic improvement in one of the following ways:
1. By achieving a cumulative 2.5 average on all summer or correspondence work attempted at the University of Colorado since suspension. (A student must register for a minimum of 6 credits in the summer term on any campus, through correspondence work, or through credit courses in the Division of Extended Studies.)
2. By raising the cumulative grade-point average to 2.0 through correspondence or summer work at the University of Colorado.

3. By raising the cumulative grade-point average to 2.0 through course work at another institution, that is, by combining the University of Colorado cumulative grade-point average with course work taken at another institution. However, upon return to the University, the student's previous grade-point average is retained; the GPA from other institutions does not transfer to the permanent GPA record at the University of Colorado.

**Second Suspension**

A student suspended for a second time will be readmitted only under unusual circumstances and only by petition to the Admissions Committee of the College of Liberal Arts and Sciences. Each petition will be examined individually. The committee will expect the student to show that chances for successful completion of an educational program in the College have been materially improved.

**PETITIONING FOR SPECIAL REQUESTS OF EXCEPTIONS TO STANDING ACADEMIC POLICY**

The Academic Standards Committee is responsible for the administration of the academic policies of the College as established by the faculty. This committee constitutes the bridge between the faculty in its legislative capacity and the students upon whom the legislation comes to bear. The committee alone is empowered to grant waivers of exemptions from and exceptions to the academic policies of the College. Students wishing to submit a petition to the committee should meet with the advising staff first to discuss the petition.

Procedures for appealing a grade before the Academic Standards Committee are available for review in the College Advising Office.

The Office of Admissions and Records establishes deadlines each semester for registering, adding courses, dropping courses, selecting the pass/fail option, and withdrawing from the University. These deadlines are clearly identified in each term's Schedule of Classes. Students seeking to waive these deadlines must petition the associate dean of the College. Instructions for deadline petitions are available from the College Advising Office, 556-2555.

**COURSE LOAD**

The normal full-time academic course load for students is 12 to 18 credit hours each semester. Students registered for fewer than 12 hours are regarded as part-time students. Students desiring to register for 19 hours or more must obtain approval from the associate dean. The designation as a part-or full-time student depends only upon courses taken for credit in the University or interinstitutionally with another college. Correspondence courses and noncredit courses are not included in the course load. To receive credit, the student must be officially registered for each course.

For the summer term, 8 credit hours is considered full time, and students registering for more than 13 hours must obtain approval from the associate dean. Since the summer courses vary in length, the recommended course load can be substantially less than in the fall and spring semesters.

Students who are employed while enrolled in the College should register for course loads they can expect to complete without unusual difficulty. Recommended course loads for working students are given in the General Information section of this Catalog; however, students must assess their own abilities, course requirements, employment responsibilities, and family obligations in determining an appropriate course load. The College assumes that all courses selected will be completed.

**EARNING ACADEMIC CREDIT—SPECIAL OPTIONS**

Students in the College may earn credit toward a degree for knowledge gained prior to enrollment in the College or for knowledge gained outside traditional college courses. Specific programs by which credit is awarded are described below. In addition, credit may be earned for ROTC. Students should contact the College Advising Office for specific details of these programs.

Hours earned in these special option courses are acceptable for elective credit and will not fulfill College core curriculum requirements. For credit in a student’s major or minor, the appropriate department must be consulted.

**Advanced Placement**

Students who have taken advanced courses in high school and who have earned high scores on the advanced placement standardized exams may be eligible for university credit. Individual departments establish advanced placement criteria for credit. Students should contact the department advisor or the Admissions Office for specific details concerning advanced placement credit.

**Credit by Examination**

Students with sufficient experience and knowledge may receive credit for a specific course by taking a comprehensive examination given by the faculty. Students seeking credit by examination should consult with the department advisor concerning department policy and with the Records Office for procedure details. Prior to taking the examination, students must pay tuition costs and fee charges for the course. Students who successfully complete the credit by examination requirements receive credit for the course, but no letter grade.

**Cooperative Education**

Students seeking academic credit from employment experience should consult the Center for Internships and Cooperative Education section of this catalog. A maximum of 9 hours of internship cooperative education may count toward the degree.

**Correspondence Study**

Students in the College of Liberal Arts and Sciences, with the approval of the associate dean, may take work in correspondence study offered by the University's Division of Extended Studies. A maximum of 30 hours of correspondence work may count toward the degree.

**Credit for Courses in the Professional Schools and in Physical Education**

Students may count up to 24 semester hours of course work taken outside of liberal arts, such as business, engineering, architecture, journalism and education. College of Liberal Arts and Sciences students desiring elementary or secondary school certification will be allowed to apply up to 15 graduate credits from the certification program of the School of Education as part of their total required hours for the bachelor's degree.

Up to 8 semester hours of activity courses in physical education will count toward the 120 hours required for the degree.

**Independent Study**

Students who are juniors, seniors, or graduates may register for independent study with the written approval of the
College Level Examination Program (CLEP)

College of Liberal Arts and Sciences students may earn university credit by examination in subject areas in which they have obtained college-level proficiency. Interested students are encouraged to take appropriate subject examinations provided in the College Level Examination Program of the College Entrance Examination Board Testing Service. The College will award credit for the following subjects if a student scores at the 67th percentile or higher:

- American government
- American history
- English literature
- General chemistry
- Introductory psychology
- Micro and macro economics

These hours are acceptable for elective credit only and will not fulfill the core curriculum requirements. For credit in a major, consult the major department advisor. A maximum of 30 hours of CLEP credit will count toward the degree.

GRADUATION REQUIREMENTS

Students graduating from the College of Liberal Arts and Sciences must fulfill requirements for the College and for the major department. Residence requirements apply to both College and major requirements. A checklist of graduation requirements is located at the end of this section.

Students graduating with a Bachelor of Science degree in music have different graduation requirements. Music students should consult undergraduate degree requirements in music in the School of the Arts section of this catalog.

Students are responsible for knowing the requirements for their degree and for fulfilling these requirements. Upon completion of the College and major requirements, the student will be awarded the appropriate degree.

The requirements for the College of Liberal Arts and Sciences have been established by degree requirements in three categories: (1) CU-Denver Core Curriculum, (2) CLAS distribution requirements and (3) foreign language.

CU-Denver Core Curriculum

The faculty of the College of Business Administration, College of Engineering and Applied Science, and the College of Liberal Arts and Sciences has established the core curriculum for undergraduate students. Beginning with the Fall 1990 Semester, undergraduate students entering CU-Denver are required to complete the undergraduate core curriculum.

The new undergraduate core curriculum seeks to provide all baccalaureate students with basic intellectual competencies in mathematics and computation, writing, oral communication, information literacy, and critical thinking. It also requires all students to attain basic knowledge in the areas of the natural and physical sciences, behavioral sciences, social sciences, humanities, and arts. Furthermore, the core curriculum promotes an awareness of cultural and racial diversity. The majority of the new core curriculum is designed to be completed during a student's freshman and sophomore years in order to provide the foundation for specific training in a student's major discipline.

The undergraduate core curriculum for liberal arts students at CU-Denver is outlined in the table below.

Intellectual Competencies

A. Writing/Speech—9 credit hours

The competency is satisfied by earning a letter grade of C or higher in 1. ENGL 1020-3 Writing Workshop 2. ENGL 2024-3 Intermediate Composition 3. CMMU 2101-3 Speechmaking or any of the following writing courses ENGL 2154-3 Intro to Creative Writing ENGL 3001-3 Critical Writing ENGL 3084-3 Advanced Composition ENGL 3154-3 Technical Writing ENGL 3170-3 Business Writing ENGL 4190-3 ST: Rhetoric/Writing

B. Mathematics—3 credit hours

The competency is satisfied by earning a letter grade of C or higher in any CU-Denver mathematics course or passing the mathematics proficiency exam (MATH 1000).

Knowledge Areas

CLAS students are exempt from the Knowledge Area defined by their major. CU-Denver Knowledge Area core courses are identified in each Schedule of Classes by a D or D/C prefix in the course title.

A. Natural and Physical Sciences—8 credit hours

| BIOL 1550-4 | Basic Biology I |
| BIOL 1560-4 | Basic Biology II |
| CHEM 1450-4 | Real World Chemistry I |
| CHEM 1460-4 | Real World Chemistry II |
| GEOL 1072-4 | Physical Geology: Surface Processes |
| GEOL 1082-4 | Physical Geology: Internal Processes |
| PHYS 1052-4 | Astronomy I |
| PHYS 1062-4 | Astronomy II |

B. Behavioral and Social Sciences—9 credit hours

Students must take at least one 3-credit course in Behavioral and Social Sciences.

| ANTH 1031-3 | Intro Anth I: Human Ancestors |
| ANTH 2102-3 | Cultural & Human Experience |
| CMMU 1011-3 | Fundamentals of Communication |
| CMMU 1021-3 | Fund of Mass Communication |
| PSY 1000-3 | Introduction to Psychology I |
| PSY 1005-3 | Introduction to Psychology II |

C. Social Sciences

| ECON 2012-3 | Prin of Econ: Macroeconomics |
| ECON 2022-3 | Prin of Econ: Microeconomics |
| GEOG 1102-3 | World Regional Geography |
| PSC 1001-3 | Contemporary Political Issues |
| PSC 1101-3 | American Political System |
| SOC 1001-3 | Introduction to Sociology |
| SOC 2462-3 | Intro to Social Psychology |

D. Humanities—6 credit hours

| HIST 1030-3 | Diverse Paths to Present I |
| HIST 1040-3 | Diverse Paths to Present II |
| ENGL 2550-3 | Masterpieces of Lit—English I |
| ENGL 2560-3 | Masterpieces of Lit—English II |
| PHIL 1012-3 | Intro to Phil: Relation of Indv to World |
| PHIL 1020-3 | Intro Ethics: Person & Community |
E. Arts—3 credit hours
- ARTS 1000-3: Arts in Our Time
- FA 1001-3: Introduction to Art
- MUS 1001-3: Music Appreciation
- THTR 1001-3: Introduction to Theatre

F. Multicultural Diversity—3 credit hours
- ANTH 3142-3: Cultural Diversity—Modern World
- ECON 3100-3: Economics of Race & Gender
- ENGL 3794-3: Ethnic Literature
- ETST 3704-3: Culture, Racism & Alienation
- PHIL 3500-3: Ideology & Culture: Racism/Sexism
- PSYC 3034-3: Race, Gender, Law & Pub. Policy
- PSY 4485-3: Psychology of Cultural Diversity
- SOC 3020-3: Race and Ethnicity in U.S.
- THTR 3202-3: Drama of Discrimination

**CLAS Distribution**

In addition to the CU-Denver Core Curriculum, the College requires each student to take an additional 9 semester hours of credit courses defined by the following table:
- Natural and Physical Sciences (includes mathematics) 3 credit hours
- Behavioral and Social Sciences (brings both behavioral and social sciences to 6 hours) 3 credit hours
- Arts 3 credit hours

Students may select any CLAS course(s) for the CLAS distribution requirement except independent study, cooperative education internships, and all courses in the student's major department.

**Foreign Language**

The College requires elementary proficiency in a foreign language. The foreign language can be satisfied in any classical or modern foreign language. The requirement is satisfied if the student has (1) completed Level III, third year, high school course (2) completed a third-semester course at CU-Denver, or other college/university, with a grade of C (2.0) or better, or (3) demonstrated third-semester proficiency by examination.

B.S. students in music are exempt from the foreign language requirement.

**Upper Division Requirement**

Students must complete at least 45 semester hours of upper division work (courses numbered 3000 or higher) to be eligible for the bachelor's degree. Any student may register for upper division courses providing he or she has satisfied the prerequisites or has the approval of the discipline in which the course is offered.

**Total Credit-Hour and Grade-Point Requirements**

To qualify for the Bachelor of Arts degree in the College of Liberal Arts and Sciences, students must pass at least 120 semester hours with an average of at least 2.0 GPA in all courses attempted at the University of Colorado.

**Major Requirements**

In addition to completing the College requirements outlined above, students in the Bachelor of Arts degree program must declare a major and fulfill requirements of the major department. Department requirements include at least 30 semester hours of work in the major with a grade of C (2.0) or higher and at least 16 semester hours in the major at the upper division level with a grade of C (2.0) or higher. The grade-point average in the major must be at least 2.0.

Semester credit hours in the major are defined by the major department within the following limits:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Min. Hours</th>
<th>Max. Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.A.</td>
<td>30</td>
<td>48</td>
</tr>
<tr>
<td>B.S.</td>
<td>36</td>
<td>56</td>
</tr>
<tr>
<td>B.F.A.</td>
<td>54</td>
<td>72</td>
</tr>
</tbody>
</table>

The department is responsible for determining when a student has successfully completed the major requirement and for certifying the completion to the dean of the College.

**DECLARATION OF MAJOR**

It is important that students declare a major as early as possible in order to receive proper advising toward departmental requirements. Students in the College must declare a major by the start of their junior year (greater than 60 hours). Transfer students to the College with junior or senior standing must declare a major in their first semester at CU-Denver. Students are allowed to change their major at any time.

**Residence Requirements**

A certain minimum number of credit hours must be earned in residence in the College of Liberal Arts and Sciences. It is not the intent of residence requirements to impede the academic progress of any student enrolled in the College.

All students have College and major residence requirements. Students should check with their major department to ascertain residence requirements for the major. Transfer students into CU-Denver must pay particular attention to residence requirements.

**Provision for Entering Freshmen**

The following residence requirements apply to students who are admitted to CU-Denver, or any campus of the University of Colorado, as a first-year freshman.

1. A student must earn the last 30 credit hours while enrolled as a degree student in the College of Liberal Arts and Sciences.
2. Twenty-one of the last 30 semester hours must be in CLAS courses taught by University of Colorado faculty.

**Provision for Transfer Students**

Residence requirements for transfer students apply to any student transferring credits to CU-Denver from another institution. Students transferring academic credit from Metropolitan State College should see the College Advising Office for special consideration of residence credit. Students transferring from other institutions of higher education will be evaluated in accordance with established guidelines governing transfer of credit.

1. Transfer students must earn a minimum of 30 resident credit hours as a degree student in the College of Liberal Arts and Sciences. These 30 resident credit hours must be in CLAS courses taught by CU-Denver faculty.
2. For transfer students with more than the minimum 30 resident credit hours, only 21 of the last 30 credit hours applied toward graduation requirements must be in CLAS courses taught by CU-Denver faculty.
3. A minimum of 30 semester hours must be letter graded as opposed to pass/fail.

**Senior Progress Report and Diploma Card**

Upon completion of 90 semester hours of course work, each student must make an appointment with the College advising staff to determine the student's status with respect to degree requirements. When their registration is confirmed for the last semester, students are required to file Diploma Cards, indicating the date
they intend to graduate, and Applications for Degree Candidacy. Failure to file a Diploma Card with the College Advising Office will result in delayed graduation. Diploma Cards and Applications for Degree Candidacy are available in the College Advising Office, NC 2024.

Summary Checklist of Graduation Requirements

GENERAL REQUIREMENTS
1. A total of 120 semester hours passed.
2. A 2.0 cumulative grade-point average.
3. A total of 45 semester hours of upper division work.
4. The last 30 semester hours while registered as a student in the College of Liberal Arts and Sciences.
5. A minimum of 30 semester hours with letter grades.

Note: Not more than 24 hours outside the College (for example business and engineering hours) can be applied toward the 120 hours required for the bachelor's degree.

COLLEGE REQUIREMENTS
1. CU-Denver Core Curriculum
2. CLAS Distribution
3. Foreign Language

MAJOR REQUIREMENTS
1. 30 to 72 semester hours in major field as defined by the degree.
2. A minimum of 30 hours of C (2.0) grade or higher in the major.
3. A 2.0 grade-point average in the major.
4. A minimum of 16 semester hours of upper division courses in the major with a grade of C (2.0) or higher.
5. Special requirements as stipulated by the major department.

ACADEMIC HONORS

Honors Programs

College Honors. A student who performs superlatively in course work in the College will be awarded a bachelor's degree accompanied by the statement, with distinction. To be eligible for graduation with distinction, a student must have completed a minimum of 45 semester hours at the University of Colorado (on any CU campus), including the final semester, with a grade-point average of at least 3.75. The 45 semester hours must be completed in the student's junior and senior years. The student also must meet the College's residency requirement, i.e., the last 30 hours must be completed while enrolled as a degree student in the College.

SPECIAL NOTES:
1. A maximum of 6 semester hours may be completed with a grade of P (on P/F option) and included in the 45 semester hours.
2. All credit courses which are completed through the Division of Extended Studies may be included in the 45 semester hours.
3. In calculating the minimum total of 45 semester hours, part of a semester will not be counted but, instead, all courses in a semester will be included.

Departmental Honors

Most departments in the College offer programs through which students can qualify for Latin honors: *cum laude*, magna *cum laude*, or *summa cum laude*. Determination of the level of honors is made by the department. Detailed information can be obtained from the College Advising Office or from an individual department.

Dean's List

The College publishes and displays each semester a Dean's List, honoring students who demonstrate high scholastic achievement. To earn a place on the list, students must achieve the 3.75 grade-point average in all CU hours taken during the semester, including a GPA of at least 3.75 in all CLAS courses. To be eligible for the Dean's List, students must also complete a minimum of 9 credit hours (6 credit hours in summer term) in structured CLAS courses (excludes independent study and cooperative education internships) for letter grades by the end of the semester.

Honors in Humanities

Students may enroll in a cocurricular program that leads to graduation with Honors in Humanities for those students who complete it with a 3.0 GPA or better. The program is open to all CU-Denver students, but it is specially designed for students majoring in non-humanities disciplines (such as business, engineering, the sciences, and social sciences). This interdisciplinary program acquaints students with the methodologies and knowledge of humanistic studies (art, drama, history, literature, philosophy) and it provides advanced training in writing. The program is intended for students interested in the study of the development of human values and their relationship to human experience at large and to scientific and technological knowledge specifically. For detailed information, contact the director of Honors in Humanities, 556-2649.

PREPARATION FOR PROFESSIONS

Completion of the undergraduate curriculum of the College of Liberal Arts and Sciences can prepare students for a number of careers in the professions. Information on preparation for those professions most frequently asked about by students in the College is presented here. Students seeking information about other professions should contact the College Advising Office, 556-2555.

Law

Students intending to enter a school of law may major in any field while completing their bachelor's degree programs since law schools do not generally specify a particular undergraduate degree major. Students preparing for law school should place primary emphasis on learning superior methods of study, critical thinking, and communication skills, which are often considered more important by law schools than factual knowledge alone. The Law School Admission Test (LSAT) is required of all applicants for admission to law school and should be taken as early as possible during the senior year. For additional information, students should review the current *Prelaw Handbook*, published by the Law School Admissions Council and the Association of American Law Schools.

Students interested in applying for admission to the School of Law of the University of Colorado should contact the Admissions Office of the School of Law, Room 118, Fleming Law Building, Boulder, CO 80309.

Journalism

Students interested in preparing for a career in journalism may decide to obtain a bachelor's degree from the College as a general preparation, or they may choose to complete a B.S. degree in journalism from the University of Colorado at Boulder. Interested students should consult the *University of Colorado at Boulder Catalog* for detailed information concerning requirements for the B.S. degree in journalism. For further information and
advising, call the Department of Journalism on the Boulder campus, 492-5007.

Health Careers
The College has established a Health Careers Advisor to assist students in dentistry, medicine, osteopathy, and veterinary medicine. Students should contact the Health Careers Advisor at 556-8440 for current requirements and advising.

Allied Health Careers
Course programs have been developed within the College to prepare students for the following specific careers within the general area of health sciences:

- Child health associate
- Dental hygiene
- Medical technology
- Nursing
- Optometry
- Pharmacy
- Physical therapy
- Podiatry

Because the prerequisites for these health career programs are continually changing, students interested in pursuing one of these careers should contact the Allied Health Careers Advisor at 556-2555 for current requirements and for advising.

Education
Students seeking certification for teaching at the elementary or secondary school level must complete a major program in the College of Liberal Arts and Sciences, and approximately 35 to 45 semester hours of professional education work in the School of Education. Up to 15 graduate credits from the Teacher Certification Program of the School of Education may be applied toward the bachelor's degree in the College.

Students pursuing teacher certification should apply for admission to the Teacher Certification Program during the last semester of the junior year. The minimum requirements for acceptance are: completion of at least 90 semester hours of acceptable college work with a grade-point average of 2.5 for all courses attempted, and 2.5 for all courses attempted at the University of Colorado, and 2.5 in the major teaching field.

Information on the general education requirements for students planning to teach at the secondary or elementary school level are available in the Teacher Education Program in the School of Education, 556-8451.

COLLEGE-WIDE
INTERDISCIPLINARY
ACADEMIC PROGRAMS
Most of the individual departments represented in the College have numerous links with other disciplines, and many faculty members consequently encourage students to take courses in related disciplines. In the natural and physical sciences new subject-matter areas are emerging from blends of traditional disciplines; examples include biochemistry, geophysics, biophysics, and psychobiology. In the social sciences the similarity of method and of subject matter from discipline to discipline tends to promote broad interaction and a sense of common purpose. The arts and humanities the continual synthesis of useful analytical ideas and concepts gains strength as it is tested against differing perspectives; comparative literature, mixed media fine arts, and philosophical psychology are examples of this kind of interdisciplinary involvement. Therefore, students will often find opportunities to explore relationships among different disciplines while studying within traditional disciplines. In some instances, such as ethnic studies, much or most of the academic work can be characterized as interdisciplinary even though the area is treated as a traditional discipline.

For information on the Master of Basic Science and Master of Science in Environmental Science degrees see the appropriate heading in this section of the catalog.

Individually Structured Major
Some students wish to study in depth, as a major program, a coherent topic area that crosses traditional disciplinary lines and/or requires significant independent study to complete. These students are encouraged to propose a design for an individually structured major program. To pursue an individually structured major, a student must work out the details of the proposed program some time after the first year in the College with a committee of College faculty members. The major becomes the student's official program upon final approval by the faculty committee and the associate dean of the College. Advising for the individually structured major is available through the College Advising Office, 556-2555.

Ethnic Studies
This interdisciplinary program, housed in the social sciences, provides a minor. For a complete description see Ethnic Studies in this section of the catalog.

Interdisciplinary Programs in the Humanities
Undergraduate. Honors in Humanities is a cocurricular program designed for students whose academic major lies outside of the humanities, although anyone interested in a structured curriculum in humanistic studies is invited to participate. In particular, students in business, engineering, and the sciences will find this program valuable in deepening their undergraduate education. For details on this program, see Honors in Humanities, in this section of the catalog.

Graduate. A complete interdisciplinary program leading to the Master of Humanities is available at CU-Denver. This curriculum combines the arts, communication, literature, philosophy, and theatre, and is especially attractive to public school teachers who teach in several areas and also to working professionals seeking intellectual enrichment or making mid-career changes. For details on this program, see Master of Humanities, in this section of the catalog.

Joint Degree Programs:
B.A./M.B.A. and B.A./M.P.A.
The College of Liberal Arts and Sciences, in cooperation with the College of Business and Administration and the Graduate School of Public Affairs, offers students the opportunity to complete a bachelor's degree and master's degree in five years rather than the usual six years. The programs combine undergraduate general education and major studies with a specialized curriculum in business or public affairs, and strive to develop intellectual and professional skills in a coordinated manner.

Students in the B.A./M.B.A. or B.A./M.P.A. programs must fulfill all of the graduation requirements from the College of Liberal Arts and Sciences (CLAS); maintain a 3.5 undergraduate grade-point average in CLAS and complete 75 percent of their undergraduate program to be eligible for admission; and enroll formally in the programs through the CLAS Advising Office. Students admitted into either of the programs begin taking 6000-level courses in business or public administration during their senior year. These courses will
International Affairs, Individually Structured, Major, Minor, and Certificate

Director:
Stephen Thomas
CU-Denver 120
556-3489

International Affairs is an interdisciplinary program that offers opportunities to pursue an individually structured major, minor, or certificate. It combines the expertise of faculty in the College of Liberal Arts and Sciences as well as the Colleges of Business and Engineering, and the Schools of Education and Public Affairs.

The destiny of the United States is increasingly influenced by events on the global scale. In the future, we will live and work in a world in which interdependence will require an expanded sense of the world beyond our boundaries. An increased knowledge of the world and a sensitivity to differing cultures and perspectives is necessary in much of our decision making in business, public service, and our private lives.

The International Affairs Program is open to all undergraduate and graduate students. The minor can be combined with any undergraduate major in the College of Liberal Arts and Sciences. A Certificate in International Affairs is available to students enrolled in any CU-Denver baccalaureate program or who wish to focus on international affairs without taking a foreign language.

Students electing to pursue an individually structured major, minor, or to earn a certificate in international affairs are given the maximum opportunity to design their own personalized course of study in cooperation with an international affairs faculty advisor.

For further information contact Joan Van Becelaere or Jerald Wagenman in the Office of International Education, CU-Denver 120, 556-3489.

Requirements for the Individually Structured Major:
1. Personalized program plan constructed with the help of faculty advisors.
2. From 48 to 54 hours in international affairs related courses in three academic disciplines with a minimum of 15 hours in each discipline.
3. A capstone course to be completed during the senior year either as an independent study with an advisor or as a seminar.
4. A minimum of a fourth semester proficiency in a modern foreign language if a language is not chosen as one of the three disciplines for specific concentration.
5. All College of Liberal Arts and Sciences college requirements for graduation.

Requirements for a Minor
1. Undergraduate student at CU-Denver.
2. Fourth semester proficiency in a foreign language.
3. 16 hours distributed over at least 3 disciplines.
4. Develop a personalized study focus with the help of an international affairs advisor.

Requirements for a Certificate
1. Student at CU-Denver.
2. 19 hours distributed over at least 3 disciplines.
3. Develop a personalized study focus with the help of an international affairs advisor.

Neuroscience Program

Neuroscience is one of the fastest growing fields among the health sciences—encompassing neuroanatomy, neurochemistry, neurophysiology, neuropathology, and behavior. This multidisciplinary program including biology, chemistry, and psychology, is intended to prepare students for graduate study in the neurosciences. The neurosciences program consists of a core of required courses, three elective courses, and an additional body of course work that will vary according to the student's area of emphasis within this broad discipline. Prospective neuroscience students should identify an area of emphasis and plan their curriculum through consultation with advisors in the disciplines represented.

The following faculty in the College of Liberal Arts and Sciences serve as advisors in the Neuroscience Program:
- Biology Advisors: Gerald Audesirk, Teresa Audesirk, or Linda Dixon, 556-8440
- Chemistry Advisor: John Lanning, 556-2557
- Neuroscience Program Director: Stephen Thomas
- Psychology Advisor: Gary Stern, 556-8565

Women's Studies

Women's Studies is an interdisciplinary program that focuses on gender issues in the humanities, natural sciences, and social sciences. At the undergraduate level, a Women's Studies minor is available in the College of Liberal Arts and Sciences, and at the graduate level a Women's Studies Certificate is available in the Master of Social Science program. The following requirements (totaling 19–21 credits) must be completed in order to minor in the Women's Studies program at CU-Denver:

1. Introduction to Women's Studies (ENGL 2400/3400-3, HIST 2540/3540-3).
   This introductory course traces the evolution of contemporary Western gender identities through literary and historical sources.

2. Fifteen credits of Women's Studies related courses at the 3000 level or above. At least one course must be taken in each of the three areas of arts and humanities, natural and physical sciences, and social sciences. Up to 6 hours can be taken in Women's Studies related cooperative education and/or independent studies. (For example, such internships in political science include working with the Domestic Violence Unit of the City Attorney's Office.)

3. Senior Project in Women's Studies (1–3 credits). Research or creative work project done under the supervision of a faculty member on an independent study basis. The project should attempt to integrate the perspectives and/or approaches of more than one discipline on gender images, roles, or identities. Students will present their projects at Women's Studies Brown Bag gatherings of interested faculty, students, staff, and community members.

At least 10 credits of work (including the senior project) must be completed at CU-Denver in order to receive a minor in Women's Studies.

Contact: Jana Everett, Political Science, 556-2436

Writing Center

Both undergraduate and graduate students come to the CU-Denver Writing Center for help with the papers they are writing for their classes. They also come for help with more personal writing: resumes and graduate school applications, for example. Assistance is provided throughout the writing process, from developing and organizing drafts to revising and editing them. The Center is staffed by members of the CU-Denver Department of English Writing Program faculty, skilled in scientific, technical, and business writing, as well as in writing for the arts and humanities. Writing Center services are free. No appointment is necessary. For additional information, contact the Writing Center, NC 1804, 556-4845.
The School of the Arts at CU-Denver has as its mission the preparation of creative practitioners, managers, and consumers of the arts. Opportunities are provided for an integrated arts education leading to careers in the arts, application of the arts to other professions, and personal enrichment.

The curricular and extra-curricular programs offered are based upon arts theory and practice with emphasis on historical, social, creative, and commercial considerations. Particular importance is placed on the integration of academic programs with local, state, regional, and national arts communities so the School also is a resource that provides information, expertise, and guidance. In this area the resources of the city, state, and region are available to students interested in internships and other practical experiences.

It is the ultimate goal to provide the environment in which artists at all stages of development can pursue the creative process and, in so doing, gain a traditional grounding in fundamental methods with expanded opportunities for individual expression.

Students wishing to major or minor in any of the disciplines in the School of the Arts (fine arts, music, or theatre), should consult with the appropriate department chair or the director of the School.

**FINE ARTS**

Chair: Judith K. Thorpe  
Office: AR 185  
Telephone: 556-4891  
Faculty: Professors: Charles L. Moore, Ernest O. Porps  
Associate Professors: John R. Fudge, Gerald C. Johnson, Judith K. Thorpe  
Assistant Professor: Lorre Hoffman  
Attendant: Jane Comstock

**Undergraduate**

The pursuit of education in the visual arts develops a comprehensive knowledge of various media: painting, photography, drawing, sculpture, etc., including an understanding of art theory that encourages informed and powerful decisions in the practice of one's craft. Similarly, the pursuit of art history involves knowledge of the methods and materials of art, as well as of the other historical disciplines and methodologies (the history of ideas, culture, philosophy, or religion) that provide insight about the history of art and the imagemaking process. While the emphasis in the studio area is visual arts practice, the history of art emphasis is on critical writing and analysis.

A variety of opportunities is open to the fine arts major. The degree can be specific preparation for graduate study or a more general background for fields related to the visual arts in several areas including arts administration, museum and gallery work, and art conservation.

Note: All new students and transfer students should contact the art department chair as early in their academic careers as possible for information and for assignment to an advisor.

Graduating students receiving the B.F.A. degree are required to have a senior show during their last semester of study. This procedure will be coordinated by the student's advisor.

**BACHELOR OF FINE ARTS—CREATIVE ARTS**

Minimum credit hours: 54  
Maximum credit hours: 72  
Residency requirement: 27 credit hours must be taken at CU-Denver

**Required Courses**

- F A 1100. Basic Drawing  
- F A 1200. Basic Painting  
- F A 1500. Basic Sculpture  
- F A 2400. Visual Studies  
- F A 2600. Art History Survey I  
- F A 2610. Art History Survey II  
- F A 3180. Photo Criticism  
- F A 3630. History of Photography  
- F A 4800. Art Seminar  
- F A 3150. Photo I (foundation course)  
- F A 3190. Photo II (foundation course)  
- F A 4150. Photo III (junior photo seminar—must be taken at CU-Denver)  
- F A 4190. Photo IV (senior photo seminar—must be taken at CU-Denver)  
- F A 4950. B.F.A. Thesis—must be taken at CU-Denver

Total credit hours—39, plus 3 to 12 credit hours of photography electives, 6 hours upper division art history, plus 6 to 15 credit hours of fine arts electives; TOTAL CREDIT HOURS—54 to 72.

Up to 9 hours of credit in art courses not offered by CU-Denver may be transferred from other accredited institutions toward the major. These, like all transfer hours, must be approved by an advisor. These courses will allow students to integrate such topics as film making, video, electronic imaging, etc., into their study of photography.

All classes must be completed with a grade of C or better.

**BACHELOR OF FINE ARTS—PHOTOGRAPHY**

Minimum credit hours: 54  
Maximum credit hours: 72  
Upper division credit hours required: 24  
Residency requirements: 27 credit hours must be taken at CU-Denver

**Required Courses**

- F A 1100. Basic Drawing  
- F A 1200. Basic Painting  
- F A 1500. Basic Sculpture  
- F A 2400. Visual Studies  
- F A 2600. Art History Survey I  
- F A 2610. Art History Survey II  
- F A 3180. Photo Criticism  
- F A 3630. History of Photography  
- F A 4800. Art Seminar  
- F A 3150. Photo I (foundation course)  
- F A 3190. Photo II (foundation course)  
- F A 4150. Photo III (junior photo seminar—must be taken at CU-Denver)  
- F A 4190. Photo IV (senior photo seminar—must be taken at CU-Denver)

Up to 9 hours of credit in art courses not offered by CU-Denver may be transferred from other accredited institutions toward the major. These, like all transfer hours, must be approved by an advisor. These courses will allow students to integrate such topics as film making, video, electronic imaging, etc., into their study of photography.

All classes must be completed with a grade of C or better.

**BACHELOR OF ARTS—FINE ARTS (STUDIO)**

Minimum credit hours: 42  
Maximum credit hours: 48  
Upper division credit hours required: 24  
Residency requirement: 21 credit hours must be taken at CU-Denver

**Required Courses**

- F A 1100. Basic Drawing  
- F A 1200. Basic Painting  
- F A 1500. Basic Sculpture  
- F A 2400. Visual Studies  
- F A 2600. Art History Survey I  
- F A 2610. Art History Survey II  
- F A 4800. Art Seminar
Plus 6 upper division hours in art history; 15 to 21 credit hours of electives in art (15 must be upper division); total credit hours—42 to 48.

Up to 9 hours of credit in art courses not offered by CU-Denver (such as ceramics, woodworking, jewelry design) may be transferred from other accredited institutions toward the major.

All classes must be completed with a grade of C or better.

BACHELOR OF ARTS—FINE ARTS (ART HISTORY)

Minimum credit hours: 42
Maximum credit hours: 48
Upper division credit hours required: 24
Residency requirement: 21 credit hours must be taken at CU-Denver

Required Courses

FA 1100. Basic Drawing
FA 1200. Basic Painting
FA 1500. Basic Sculpture
FA 2400. Visual Studies
FA 2600. History of Art Survey I
FA 2610. History of Art Survey II
FA 4650. 19th Century Art
FA 4660. 20th Century Art
FA 4690. Renaissance Art
FA 4790. Methods in Art History

One studio art class—3 credits
Three other art history classes, at least one of which is upper division—9 credits
Total credits—18

Note: At least 12 of these credit hours must be completed at CU-Denver. No grade below C will be counted toward the minor requirements.

Graduate

The graduate courses in fine arts also are applicable to the Master of Humanities program at CU-Denver.

Courses

Note: Attendance is required at all sessions.

INTERDISCIPLINARY ARTS

ARTS 1000-3. Arts in Our Time. Arts in Our Time is a multidisciplinary course designed to introduce students to the ways in which artists work, and how the arts shape our perception of the world around us. Each student will select 3 four-week modules designed to examine each of the disciplines of fine arts, music, and theatre in the context of the creative process, audience perception and historical perspective. Every five weeks, students from each of the modules will join forces in a weekend of "inter-arts sessions"—lectures and discussions about the relationship of the arts to each other and to our contemporary culture. Topics which will be addressed in the modules include such things as American musical theatre, perception of jazz, public sculpture, light as art, sonic explorations, photography, history of production design, women in American music, and censorship.

DRAWING

FA 1100-3. Basic Drawing. An introduction to drawing designed for those who have never drawn before. Materials such as pencils, pen and ink, and crayons will be used in class. Subjects will include photographs, real objects and the human figure.

FA 1601-1. Botanic Illustration I. This course is a continuation of FA 1601 (Botanic Illustration I) and covers watercolor theory, color mixing, and brush techniques to produce accurate renderings of plants and flowers. It includes an introduction to drawing plants for publication. Prereq: FA 1601 or consent of instructor.

FA 1602-1. Botanic Illustration II. This course is a continuation of FA 1602 (Botanic Illustration II) and involves the development of two portfolios of Botanical Illustrations using mixed media such as pastels and acrylics, and then a media of your own choice. Prereq: FA 1601 

FA 3000-3. Intermediate Drawing. Sequel to basic drawing, covering further explorations of drawing media, techniques, and more advanced problems in composition. Prereq: FA 1600.

FA 3020/4020/5020-3. Life Drawing. Drawing as practice integrating visual, physical, intellectual, and intuitive faculties, using the human figure as subject. Prereq: FA 1000.


PRINTMAKING

FA 3400/3410-3. First-Year Printmaking. Introduction to intaglio and relief printing, including metal engraving and etching, and woodcut.

FA 3420/3430-3. Silk Screen (Serigraphy). Silk screen techniques as they relate to fine art prints.


PAINTING

FA 1200-3. Basic Painting. Structured introduction to painting for people who have never painted before. Work will be done in acrylic (water base) paint in both
black and white and color. Basic drawing is advised as a prerequisite.

FA 2200-3. Painting I. A follow-up course to basic painting and an emphasis on the development of painting skills. In completing specific assignments, students will be encouraged to explore a variety of painting techniques. Both acrylic and oil painting techniques will be taught. Prereq: F A 1200.


FA 3220/4220/5220-3. Watercolor. Explores various approaches to transparent watercolor, working from a variety of different subject matter. Second level will work independently and include mixed media. Prereq: F A 1200; 3220-Intermediate watercolor; 4220-Advanced watercolor; 5220-Graduate watercolor.


SCULPTURE

FA 1500-3. Basic Sculpture. This course stresses creativity, design and visualization in the three-dimensional area. A number of class projects will deal with shape, line, volume, and color. Slide presentations and shop demonstrations will be coordinated with projects, as well as class discussions of student work.

FA 2500-3. Sculpture II. This course follows up basic sculpture with an emphasis on the development of technical skills. The course will focus on mold making procedures and metal-fabricating, and will explore the relationship of these to other areas of sculpture. Prereq: F A 1500.


FA 4520-3. Performance/Installation. Individual and collaborative projects, pieces, and events that develop one’s attitudes, trust, and abilities to express through the awareness of space, environment, and the human condition and body. Prereq: F A 1500.


PHOTOGRAPHY

FA 3150-3. Photography I. First semester of comprehensive foundation course in black and white photography. Introduction to aesthetics, concepts, and history of photography as well as basic camera and darkroom technique. Emphasis on photography as a means to a formal and expressive end.

FA 3170-3. Color Photography I. Introduction to color theory, materials and technique. Using language and skills acquired in Photo I, students will explore the symbolic and psychological possibilities of color in image making. Prereq: F A 3150 or consent of instructor.

FA 3180-3. Photo Criticism. Introduction to the historical texts of photo criticism. Course will examine texts relating to practice of photography as fine art from early 19th century to present. Critical writing about photography will be discussed and practices. Prereq: F A 3630.

FA 3190-3. Photography II. Second semester of comprehensive foundation course in black and white photography. Further development of concepts, vocabulary, and aesthetics, as well as camera and darkroom skills. Prereq: F A 3150.

FA 3630-3. History of Photography. A comprehensive history of photography, from 1839 to the present. Slides of historic photographs and a number of original photographs will illustrate the various stages, techniques, and types of photography and their relationships to the totality of art.

FA 4140-1 to 3. Topics in Photography.


FA 4190-3. Photography IV. An advanced project-oriented course. Emphasis will be on integrating visual and conceptual ideas into a cohesive body of work. Students will design a proposal outlining their intentions for a long-term semester project culminating in a public exhibition of the completed work. Upon approval of the proposal, adequate research in support of the project must be completed by midterm. Critiques of work in progress will be conducted every two to three weeks. Prereq: F A 4150.

FA 5140-1 to 3. Topics in Photography.

GENERAL ARTS


FA 3342-1 to 3. Topics in Studio Art.

FA 4340-1 to 3. Topics in Studio Art.

ART HISTORY

Students enrolled at the 5000 level may expect additional work and evaluation commensurate with graduate students.

FA 1001-3. Introduction to Art. This course is an introduction to art both in our everyday lives and in the more formal appreciation of the art world in general.

FA 2600-3. History of Art I (Survey). History of art of all ages, reflecting the various cultures of humankind from cave painting to the Renaissance.

FA 2610-3. History of Art II (Survey). History of art of all ages, reflecting the various cultures of humankind from the Renaissance to the present.

FA 3643-1 to 3. Topics in Art History.

FA 3644-1 to 3. Topics in Art History.

FA 4610/5610-3. Pre-Columbian Art. Architecture, sculpture, and painting of the high cultures of Meso-America and the Andean area before the Spanish conquest. Prereq: F A 2600 or 2610 or consent of instructor.

FA 4620/5620-3. American Art. Study of American art and architecture from the Colonial period to the present. Prereq: F A 2600 or 2610 or consent of instructor.


FA 4660/5660-3. Twentieth Century Art. A survey of major trends in painting, sculpture, and architecture from Post-Impressionism, to the present. Prereq: F A 2600 or 2610 or consent of instructor.

FA 4670/5670-3. Greek and Roman Art. Greek art and architecture from Archaic through Hellenistic periods, Etruscan art, and Roman art from the Republican period to the fall of the empire. Prereq: F A 2600 or 2610 or consent of instructor.

FA 4680/5680-3. Art of the Middle Ages. A survey of sculpture, painting and architecture from A.D. 300 to 1500, which includes the art of the Early Christian, Byzantine, Early Medieval, Romanesque, and Gothic periods. Prereq: F A 2600 or 2610 or consent of instructor.

FA 4690/5690-3. Renaissance Art. The art and architecture of Italy and Northern
Europe (Flanders, France, and Germany) from the late 14th century to the late 16th century. Prereq: F A 2600 or 2610 or consent of instructor.

FA 4710/5710-3. Baroque and Rococo Art. The history of art in Italy, Spain, France, England, and the low countries in the 17th and 18th centuries. Prereq: F A 2600 or 2610 or consent of instructor.


FA 4730/5730-3. Arts of Japan. Appreciation and chronological development of the arts of Japan. Emphasis upon the arts of Shinto and Buddhism as well as the particular Japanese aesthetic. Prereq: F A 2600 or 2610 or consent of instructor.

FA 4750/5750-3. Arts of China. A survey of Chinese painting, sculpture, and architecture from the neolithic period through the present era, including the art of Tibet. Prereq: F A 2600 or 2610 or consent of instructor.

FA 4760/5760-3. Art of the Ancient Middle East. A survey of the architecture, sculpture, and painting of the ancient middle east from their beginnings to the end of the Persian empire, including the arts of Anatolia, Egypt, Mesopotamia, and Persia. Prereq: F A 2600 or 2610 or consent of instructor.

FA 4770/5770-3. Art of India and Southeast Asia. A survey of the architecture, sculpture, and painting of India and those areas of Southeast Asia influenced by India from the period of Mohenjo Dado and Harappa to the present. The Himalayan region will be treated, as will Tantric art in general. Prereq: F A 2600 or 2610 or consent of instructor.

FA 4780/5780-3. Art of Islam. Art and architecture of the Islamic peoples from the time of Mohammed to the present. Prereq: F A 2600 or 2610 or consent of instructor.

FA 4790/5790-3. Methods in Art History. A seminar in the nature and purpose of the study of the history of art in which the student is introduced to basic approaches, various research methodologies, and professional career possibilities in the history of art. Prereq: F A 2600 or 2610 or consent of instructor.

FA 5644-1 to 3. Topics in Art History.

INDEPENDENT STUDY, COOPERATIVE EDUCATION, SEMINAR, AND THESIS

FA 3939/5939-1-3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employ-
The Department of Music requires an audition of all entering freshman and undergraduate transfer students. In lieu of the personal audition, applicants may substitute tape recordings (about ten minutes in length) and a statement of music reading competence from a qualified teacher. Interested students should write to the Department of Music, CU-Denver, for audition applications.

Advising

New entering freshmen make initial contact with Department of Music staff at Room 288, Arts Building or by calling 556-2727. At that point, they will be assigned to a faculty advisor or meet with the Department of Music chairperson.

Continuing students are advised by their assigned faculty advisor by appointment. Please call 556-2727 for information about Advising Days, a two-day period in November (for Spring term) and in April (for Summer/Fall terms).

All transfer students meet with the Department of Music Chairperson for initial advising. Call 556-2727 for an appointment.

All pregraduation evaluations of first semester Music seniors are done by the Department of Music, CU-Denver, teacher. Interested students should write for audition applications.

Academic Policies

RESIDENCY REQUIREMENTS

The Department of Music requires that 56 of the hours required for graduation must be completed in residence. This total may be reduced by the transfer of credit from other accredited institutions, but in no case shall the minimum be fewer than 40 hours distributed over three semesters.

ENSEMBLES

All music majors enrolled in an applied music course are required to register for a minimum of 7 credit hours of course work, including a music ensemble. Non-music majors are invited to audition for any of the CU-Denver music ensembles. Each carries 1 semester hour of credit. Some of these groups have more than one section, depending upon skill level: Electronic Music Ensemble, Jazz Combo, New Music Ensemble, The New Singers, Fusion Ensemble, Dixie Ensemble, Chamber Music (various), Percussion Ensemble, Brass Ensemble, Woodwind Ensemble, and Vocal Jazz Combo.

FACILITIES FEE

All music majors are required to pay a $24 facilities fee at the time of registration. Non-music majors will be assessed a similar fee when registering for selected technical courses (see course descriptions).

APPLIED MUSIC POLICY

All performance standards, requirements, and credits specified for a particular music degree in the department do not necessarily transfer and become acceptable for any other music degree within the department. Additional information on this policy is available from the Chair of the Department of Music. All applied music courses are restricted to music majors and minors only.

Undergraduate

The Bachelor of Science in Music degree is intended for students seeking preparation for professional careers in music related to music writing and performance, recording, broadcasting, business and the entertainment industries.

CORE CURRICULUM

University Core Curriculum ........................................ 38
CLAS Distributed Core ............................................. 9

Required Courses in Music

MUS 1100-1110, Theory and Musicianship ......................... 4
MUS 1200-1210, Theory and Musicianship II ....................... 4
MUS 2100-2110, Theory and Musicianship III .................... 4
MUS 2200. Contemporary Styles ................................... 3
MUS 2830, 2840. History and Literature of Music I and II ...... 6
Music History Elective ............................................. 3
PMUS 1023. Class Piano (see note 1) ................................ 4
Applied Music (see note 2) ......................................... 8
Ensembles ......................................................... 4
MUS 2700, 2710. The Music Business I and II ............. 6
MUS 2540. Music Technology I .................................. 3
MUS 2470. Music on Personal Computer ......................... 3
Total .................................................................. 52

Credits in Area of Study ............................................. 29
Total Semester Hours Required ................................... 128

Note 1: Piano majors must take 3 semesters of PMUS 1033, Piano class for piano majors, in place of this requirement.

Note 2: Guitar majors are required to take 2 semesters of PMUS 1093, Fingerboard class, in addition to applied requirement.

AREAS OF STUDY

When students are approaching completion of courses in the core curriculum, they are to select an area of study in consultation with an advisor. An area of study is to be selected from the following:

Emphasis in Scoring and Arranging

MUS 2080. Intro to Arr. I .......................................... 2
MUS 2090. Intro to Arr. II ........................................ 2
MUS 3050. Elementary Composition ............................. 2
MUS 4020. Advanced Composition ................................ 3
MUS 3030. Scoring and Arranging I ......................... 2
MUS 4030. Scoring and Arranging II .......................... 3
MUS 2560. Music Tech II .......................................... 3
MUS 2510. Music Tech II Lab .................................... 1
MUS ____ . Dist. Studies ........................................... 8

Select from:

Dig. Mus. Tech. ..................................................... 3
Songwriting ............................................................ 3
Analysis ................................................................. 3
Orchestration .......................................................... 3
16th Cent Cntrpnt .................................................. 3
18th Cent Cntrpnt .................................................... 3
Applied Music ....................................................... 3

MUS ____ . Music Electives ........................................ 3
Total .................................................................. 29

Emphasis in Music Engineering

MUS 2560. Mus Tech II ............................................ 3
MUS 2510. Mus Tech II Lab ...................................... 1
MUS 3540. Main. & Calib ......................................... 3
MUS 4560. Mus. Eng. I ............................................ 1
MUS 4570. Mus. Eng. II .......................................... 3
MUS 4530. Mus. Eng. II Lab ..................................... 1
MUS ____ . Music Electives ....................................... 5
MUS ____ . Music Electives ....................................... 5
MUS ____ . Music Electives ....................................... 5
MUS ____ . Mus. Eng. Elect ....................................... 6
MUS ____ . Mus. Eng. Elect ....................................... 6
MUS ____ . Senior Project ......................................... 3
Total .................................................................. 29

Elective Studies in Music Management

MGMT 1000. Intro to Business .................................... 3
MUS 4720. Music Management ................................ 3
MUS 4730. Music Production ................................... 3
ACCT 2000. Introduction to Financial Accounting ......... 3
MKTG 3000. Principles of Marketing ...................... 3
FIN 3050. Basic Finance .......................................... 3
MUS 2560. Music Tech II ........................................ 3
MUS 2510. Music Tech. II Lab ................................ 1
MUS ____ . Music Electives ....................................... 3
MUS ____ . Senior Project ......................................... 4
Total .................................................................. 29
**Emphasis in Performance**

**Music Technology Minor:** Semester Hours
- MUS 3283. Cont. Improv 2
- MUS 4060. Analysis 2
- MUS ___ Applied Music 3
- MUS ___ Applied Music 3
- MUS ___ Applied Music 3
- MUS ___ Applied Music 3
- MUS ___ Ensemble 1
- MUS ___ Ensemble 1
- MUS ___ Ensemble 1
- MUS ___ Ensemble 1
- MUS Music Electives 9

Total: 29

**PERFORMANCE REQUIREMENTS**

Students are required to include applied music study on their principal performing medium (instrument or voice) from the outset of their studies at CU-Denver. Students are required to perform in a Performance Jury at the end of each semester of applied study and to pass a performance proficiency examination at the end of their fourth semester of study. All majors taking applied music must perform in a solo or solo plus accompaniment capacity at least once a semester on a General Recital. General Recitals are scheduled throughout the semester.

**ENSEMBLE REQUIREMENT**

A minimum of 4 semester hours in ensemble participation is required. All music majors enrolled in an applied music course are required to register for an ensemble. Students should acquire experience in both large and small ensembles, vocal and instrumental, in accordance with their capabilities and interests.

**Music Minors**

**Music Technology Minor:** Semester Hours
- MUS 1100. Theory 3
- MUS 1110. Ear Training/Sing I 1
- MUS 1200. Theory II 3
- MUS 1210. Ear Training/Sing II 1
- MUS 2830. Music History I 3
- MUS 2840. Music History II 3
- MUS 2540. Music Tech I 3
- MUS 2560. Music Tech II 3
- MUS 2520. Music Tech Lab I 1
- MUS 2470. Music on the PC 1
- MUS 4560. Music Eng. I 3
- MUS 4510. Music Eng. I Lab 1

Total: 24-25

**Performance Minor:**
- MUS 1100. Theory I 3
- MUS 1110. Ear Training/Sing I 1
- MUS 1200. Theory II 3
- MUS 1210. Ear Training/Sing II 1
- MUS 2830. Music History I 3
- MUS 2840. Music History II 3
- MUS ___ Applied Music 2
- MUS ___ Applied Music 2
- MUS ___ Ensemble 1
- MUS ___ Ensemble 1
- PMUS 1023. Piano Class 1
- PMUS 1023. Piano Class 1

Total: 23

**Music Management Minor:**
- MUS 1100. Theory I 3
- MUS 1110. Ear Training/Sing I 1
- MUS 1200. Theory II 3
- MUS 1210. Ear Training/Sing II 1
- MUS 2830. Music History I 3
- MUS 2840. Music History II 3
- MGMT 1000. Intro to Business 3
- MUS 2700. Music Business 3
- MUS 2710. Music Business 3

Total: 23

**Graduate**

All graduate degrees in music are directed from the Boulder campus by the Associate Dean for Graduate Studies. For complete information on the programs available, consult the CU-Boulder Graduate School Bulletin.

Upon consultation with a graduate advisor in Boulder, a portion of work may be accomplished on the Denver campus toward a graduate degree. Courses in music engineering, commercial scoring and arranging, and music business are offered only on the Denver campus and are typically viewed as equivalent for transfer credit to traditional degrees such as composition and education. Interested students should contact Dean, College of Music, University of Colorado at Boulder, Campus Box 301, Boulder, CO 80309.

Opportunities for graduate study in music on the Denver campus are coordinated through the Center for Humanities degree program. For further information, contact the Director, Master of Humanities, 556-2005 or 556-8394.

**Courses**

**INTERDISCIPLINARY ARTS**

**ARTS 1000-3. Arts in Our Time.** Arts in Our Time is a multidisciplinary course designed to introduce students to the ways in which artists work, and how the arts shape our perception of the world around us. Each student will select 3 four-week modules designed to examine each of the disciplines of fine arts, music and theatre in the context of the creative process, audience perception and historical perspective. Every five weeks, students from each of the modules will join forces in a week of "inter-arts sessions" - lectures and discussions about the relationship of the arts to each other and to our contemporary culture. Topics which will be addressed in the modules include such things as American musical theatre, perception of jazz, public sculpture, light as art, sonic explorations, photography, history of production design, women in American music, and censorship.

**MUSIC ACADEMIC CLASSES**

**MUS 1001-3. Music Appreciation.** Fall. For non-music majors who want to learn how to listen to music with greater understanding and pleasure. Explores the style of music in the major compositional periods including contemporary pop music. No degree credit for music majors.

**MUS 1020. Music Fundamentals.** Fall. An introduction to the rudiments of music notation, basic ear training, and reading of music. Intended for the student with little or no musical background. No degree credit for music majors.

**MUS 1100-3. Music Theory I.** Fall. A study of harmonic procedures as derived from the common practice period, and their relationship to contemporary concepts. Prereq.: placement test; coreq.: MUS 1020 and PMUS 1023.

**MUS 1110-1. Ear Training and Sight Singing I.** Fall. Coreq.: MUS 1100.


**MUS 1210-1. Ear Training and Sight Singing II.** Spring. Prereq.: MUS 1100; coreq.: MUS 1210.

**MUS 1603-2. Commercial Music Reading.** Fall. Skill preparation in music sight-reading related to big band, show, media and recording ensembles.

**MUS 1653-2. Rhythm Section Techniques.** Spring. Development of performance techniques related to big band, crossover and commercial music. Enrollment limited to guitar, keyboard, bass and percussion players.

**MUS 2030-2. Jazz Theory.** Fall. An introduction to chord symbols, chord-scale relationships, progression tendencies and stylistic techniques inherent in
jazz/rock/pop idioms. Prereq: MUS 1200 or consent of instructor.

MUS 2080/2090-2. Introduction to Scoring and Arranging I, II. Fall, Spring. A two-semester course in instrumentation, orchestration, form and analysis, score, layout, chord substitution and elaboration continuity (stylistic/dramatic coherence), and computer applications.


MUS 2110-1. Ear Training and Sight Singing III. Fall. Prereq: MUS 1200; coreq: MUS 2100.

MUS 2180-2. Introduction to Scoring and Arranging I. An introduction to the craft of scoring and arranging instrumental music, with particular emphasis on music in the popular culture. Prereq: completion of one full year of music theory and SS/ET.


MUS 2300-2. Introduction to Songwriting. A study of the craft of songwriting. Emphasis will be on historical principles of music structure and lyrics applied to contemporary taste and preference. Prereq: MUS 2010.

MUS 2400-3. Performance Management. This course will analyze the theory and practice of performance management, with specific details on the concert promotion business, and the marketing of special events for organizations and businesses. It will cover policies and procedures, talent booking, and venue and arena management. Sample contracts will be examined and analyzed.

MUS 2470-3. Music on the Personal Computer. Fall. The presentation of basic computer operation and vocabulary utilizing Apple II ALF music and Mountain Hardware Systems. Applesoft basic programs are investigated. Students write two musical selections for performance by the Apple/ALF synthesizer.


MUS 2700/2710-3. The Music Business I and II. An introduction to music as a business and profession, emphasizing music publishing, recording, broadcasting, copyright, music management, and career options.

MUS 2750-1. Philosophy and Aesthetics of Music. An introduction to major theories of music aesthetics and contemporary discussions of critical problems in music pertaining to the nature, evaluation, function, and perception of a musical work of art.


MUS 2810-3. History of Rock and Roll. A musical journey and a social history of our time, ranging from the roots of the music through Woodstock to the present day. There will be extensive class listening and viewing of videotapes and movies. No music background is required.

MUS 2820-2. Digital Music Techniques. A study of contemporary digital techniques applied to music. Selected topics from the following: MIDI; sequencing; computer programming for music; sound file editing; sampling; digital synthesis; digital per cussion. Prereq: one of MUS 2470, 4490 or 5490.

MUS 2830/2831-3. History and Literature of Music I and II. An introduction to the history and literature of music from the 11th through 20th centuries. Emphasis on the learning skills, including attendance of selected Denver Symphony Orchestra rehearsals. For sophomore/junior music majors.

MUS 3030-2. Scoring and Arranging I. Fall. Concept, layout, and arrangements for small (2, 3, 4 voice) ensemble. Prereq or coreq: MUS 2190.


MUS 3283-2. Contemporary Improvisation. Fall. An introduction through performance to the art of improvisation as practiced in contemporary Western culture. Prereq: MUS 2100, or consent of instructor.


MUS 3710-1. Music and the Media. A five-week (module) course consisting of the following topical modules:


The Musician and the Law. An overview of the laws which affect musicians, including copyright and contracts, taught from a musician's perspective.

Music in Advertising and Film. An overview of the writing, production, and marketing of commercial music.

Recording Studio Management. A nuts and bolts perspective on all aspects of managing a successful recording/audio production facility.

Independent Record Production. All you need to know about putting out your own record, cassette, or compact disc and making connections with major record companies.

MUS 3720-3. Law and the Music Industry. Fall. An overview of the body of law which governs the music industry. Emphasis on the musician's ability to recognize a potential legal dispute, and to understand his/her rights.


MUS 3800-3. Concert Music. Survey of Western art music with stylistic analyses of representative works from all major periods. Prereq: MUS 2840.

MUS 3810-3. Music of the Popular Culture. A survey of non-classical folk music, world music, pop and jazz. The class will focus on musical style with considerable attention paid to the relationship between music and society. Prereq: MUS 2800.

MUS 3939-1 to 3. Internship/Cooperative Education.
MUS 4330-2. Dixie Jazz in Your School. How to start a dixieland band in your secondary or middle school. Course will cover materials, rehearsal techniques, improvisation, and arranging techniques. Culmination of the course will be a one-day field trip to Central City Jazz Festival (extra cost approximately $15).
MUS 4700-1-4. Research Project: Music Management. Senior project/individualized study by arrangement with instructor. 1-3 Credit hours can be satisfied by an internship (Cooperative Education Placement).
MUS 4740-3. Music Business Analysis. An analysis of specific managerial situations unique to the music and entertainment industries. Aspects of finance, marketing, taxation, and management science are explored.
MUS 4840-1 to 3. Independent Study.

UPPER DIVISION/GRADUATE LEVEL

Students enrolled at the 5000 level may expect additional work and evaluation commensurate with graduate standards.

MUS 4490/5490-3. Music Programs for Personal Computers. The presentation of basic computer operation and vocabulary including MIDI, contemporary systems, sequencing, sampling and computer applications to music.
MUS 4600/5600-1-3. Topics in Music. Special events, festivals, workshops, and seminars of interest to educators and active professionals in music. Typical topics have included the Vail Jazz Festival, Telluride Jazz Festival, stereo television conference, etc. Credit is variable depending on nature of event.
MUS 4720/5720-3. Music Management. Fall. The theory and practice of contemporary business management as it relates to music marketing, artist management, the recording, broadcasting, and telecommunications industries. Prereq for 4720: MUS 2100.
MUS 4730/5730-3. Music Production. Spring. A study of the business and administrative issues encountered in the management of a music production company and/or record label, including legal, organizational and financial applications. Prereq: MUS 4720 or consent of instructor.
MUS 4790/5790-1 to 3. Special Studies: Theory. Prereq: consent of instructor.
MUS 4800/5800-1 to 3. Special Studies: Business. Prereq: consent of instructor.

MUS 4820/5820-1 to 3. Special Studies: Education. Prereq: consent of instructor.
MUS 4830/5830-1 to 3. Special Studies: Other. Prereq: consent of instructor.
MUS 5510-1. Music Engineering I Lab.

MUSIC PERFORMANCE CLASSES

PMUS 1002/3002-1. CU Alumni Choir. Performing SATB choir which sings a variety of musical styles. Special emphasis on American music. Researched music including new composers, arrangers and non-traditional choral literature. Variety of performance opportunities. Prereq: audition or permission of the instructor.
PMUS 1023-1. Piano Class. Offered from beginning through intermediate levels. Course content includes functional piano skills of sight-reading, transposition, improvisation, playing by ear and performing in various styles. Class meets in the Kurzweil minisynthesizer keyboard lab. $24 Music lab fee for non-music majors.
PMUS 1033-1. Piano Class: Piano Majors. Prereq: consent of instructor.
PMUS 1093-1. Fingerboard Class. Group fingerboard instruction providing skill development in the standard guitar techniques. These studies include harmonic, melodic, and rhythmic common practice. This is a required course for all guitar performers seeking the bachelor’s degree.
PMUS 1202/3202-1. Dixie Ensemble. Rehearsal and performance of traditional jazz literature. Emphasis on intonation, rhythmic accuracy, attention to the style, dynamics and phrasing. Particular attention is paid to collective improvisation. Many performances are scheduled. The band is run on a professional basis with students assigned to equipment management, leading the band, emcee duties and uniform, publicity and booking responsibilities.
PMUS 1242/3242-1. Chamber Singers. Solo and ensemble performance in a variety of musical styles. Prereq: audition.
PMUS 1272/3272-1. Fusion Ensemble. Prereq: audition with instructor.
Theatre Major

UNDERGRADUATE

Students wishing to study theatre may choose the theatre major within the Bachelor of Arts in Communication/Theatre in the College of Liberal Arts and Sciences. The emphasis in theatre is designed to train the diversified theatre artist—writer, director, performer, designer, teacher—and to provide opportunities for a broad range of production process and performance experiences in courses, laboratory workshops, full productions, and field work in the Denver area. The goal of the theatre program is an understanding of the potential of the theatre as an expressive medium in the context of its culture and as a collaborative art form in relationship to literature, fine arts, and music.

The theatre emphasis has five areas of focus: acting/directing, design/technical, theory/history, special audiences/applied theatre, and theatre management. Each student is required to complete a comprehensive series of core courses in theatre and the allied fields, and then concentrate in one of the areas of focus with 3—4 specified upper division courses. In addition to such course work requirements, participation in a variety of on and off campus production experiences is required as a part of the practicum component of the program. Before the completion of 15 semester credit hours in the major, each student intending to declare a theatre major must be taken from CU-Denver faculty.

Electives (12 hours selected from the following)

- F A 1100. Basic Drawing
- F A 1500. Basic Sculpture
- MUS 1010. Music Fundamentals
- MUS 1001. Music Appreciation
- Two English courses from Shakespeare, British or American Drama, or Film History

Acting/Directing Focus:

- THTR 3734. Acting II
- THTR 4734. Acting III
- THTR 2554. Voice and Diction (up to 6 hours)
- THTR 2604. Stage Movement (up to 4 hours)
- THTR 3504. Oral Interpretation of Poetry
- THTR 4744. Advanced Directing
- F A 4520. Performance/Installation

Total Semester Hours

12

Theory/History Focus:

- THTR 4705. American Theatre History
- THTR 4585. Playwriting: The Long Form
- THTR 4525. Theatre Criticism
- THTR 4805. Historical Perspectives: Topics
- ENGL 3001. Critical Writing
- ENGL 3084. Advanced Composition

Total Semester Hours

12

Design/Technical Focus:

- THTR 3706. Scene Design
- THTR 3806. Lighting Design
- THTR 4836. Advanced Lighting Design
- THTR 4756. Advanced Scenic Design
- F A 1200. Basic Painting
- F A 2400. Visual Studies
- THTR 4706. Design Perspectives: Topics

Total Semester Hours

12

Special Audience Focus:

- THTR 4357. Creative Drama
- THTR 3504. Oral Interpretation of Poetry
- THTR 2734. Stage Movement
- THTR 3667. Theatre for Children
- THTR 4667. Advanced Children's Theatre
- THTR 4987. Applied Theatre Perspectives

Total Semester Hours

12

Core Courses

- THTR 1001. Introduction to Theatre
- THTR 2802. History of Theatre
- THTR 2501. Oral Interpretation of Literature
- THTR 2761. Stagecraft
- THTR 2732. Acting I
- THTR 3741. Directing
- THTR 4201. Production Process
- THTR 4581. Playwriting
- THTR 4781. Drama Theory

Total Semester Hours

30
Theatre Administration Focus:

THTR 4525. Dramatic Criticism .................. 3
MUS 4750. Legal Environment in the Arts ...... 3
MKTG 3000. Principles of Marketing ............. 3
ACCT 2000. Introduction to Accounting ......... 3
CMMU 4240. Organizational Communication .... 3
Total Semester Hours .............................. 12

In addition to the major course work, a total of 6 hours is required in theatre practice. Students will fulfill this requirement with experience from at least two options as outlined below:

THTR 2791. Departmental Production ................ 2-4
THTR 2792. Multi Arts Performance ................ 2-3
THTR 2793. Affiliated Theatre Production .......... 1-2
THTR 2794. Second Stage Production .............. 1-2
THTR 2793. Management Internship ................ 2-4
Total Semester Hours .............................. 6
GRAND TOTAL HOURS: 60

(48 in major ± 12)

As an integral part of the Denver theatre community, the theatre program at CU-Denver is dedicated to the continuation and development of such interactive programs as the Family Festival of the Arts, Works in Process, and The Performance Forum which facilitate a coordination of efforts among the Denver area theatres, cultural institutions, and the University. In order to increase the range of practical and critical experience, each theatre major will see and evaluate at least 6 theatre productions in the Denver area each term. These experiences test the assumptions and beliefs introduced in the classroom and provide the foundation for the bridge between the study of and the participation in the theatre. As majors demonstrate proficiency in performance, design, and critical skills special internships in a variety of capacities may be arranged with affiliated theatres through the practicum options in theatre practice.

Depending on the individual's actual program of study, a degree in theatre can provide a graduate with useful technical and practical skills. But, more importantly, students will gain a critical insight into theatre as a human enterprise wherever it occurs. Through examining and experiencing theatre's potential to achieve human value, students develop personal, aesthetic, and social principles which will guide them to innovative career choices in the theatre and allied fields.

Theatre Minor

Required Course work:

THTR 1001 Intro to Theatre ....................... 3
THTR 2802 Theatre History ........................ 3

-and-
any combination of the following 3-11 credits:

THTR 2791 Departmental Production .............. 2-4
THTR 2792 Multi-Arts/Perf. Art .................... 2-3
THTR 2793 Affiliated Theatre ....................... 1-2
THTR 2794 Second Stage ........................... 1-2

Electives in Theatre: 4-12 credits
TOTAL Minor Credits: 21

Courses

INTERDISCIPLINARY ARTS

ARTS 1000-3. Arts in Our Time. Arts in Our Time is a multidisciplinary course designed to introduce students to the ways in which artists work, and how the arts shape our perception of the world around us. Each student will select 3 four-week modules designed to examine each of the disciplines of fine arts, music and theatre in the context of the creative process, audience perception and historical perspective. Every five weeks, students from each of the modules will join forces in a week of "inter-arts sessions"-lectures and discussions about the relationship of the arts to each other and to our contemporary culture. Topics which will be addressed in the modules include such things as American musical theatre, perception of jazz, public sculpture, light as art, sonic explorations, photography, history of production design, women in American music, and censorship.

THTR 1001-3. Introduction to Theatre. Discussion, workshops, and lectures designed to discover, analyze, and evaluate all aspects of the theatre experience: scripts, acting, directing, staging, history, criticism, and theory. Playgoing and field trips to several Denver area theatres, demonstrations, and participation in live productions.


THTR 1810-1. Stunting in the Cinema. This workshop provides training in basic punch-up techniques for the camera. The focus will be on accuracy and safety in the two dimensional field. The class will conclude with a short routine staged for the camera. Participants will complete the workshop with a basic understanding of technique and vocabulary in real fighting.

THTR 1811-1. The Craft of Comedy. All the techniques used in effective comedic acting are also used by people in life. There are many gifted comedians who never step onto a stage and yet they "perform" every day of their lives. Why do we find certain things funny and others not funny? We will seek to define the nature of comedy as we explore ways in which a performer can approach the many different styles of comedy such as farce, satire and comedy of manners. This course will begin with a series of structured exercises and culminate in monologue and scene work designed to discover and encourage your instinct for comedy.

THTR 1820-1. Audition Preparation and Techniques. For many actors, the most difficult part of acting is the audition process. We will explore audition preparation techniques including cold copy reading, immediate and effective decision-making concerning the text, making contact with fellow actors, and making strong and risky choices. Students will participate in a mock audition for both film/television and the theatre.

THTR 2501-3. Introduction to Oral Interpretation. Examination of different theories of oral performance of literature through experimentation, discussion, and performance of myth, short story, drama, the essay, biography, letters and diaries. Each performance is designed to challenge the student's current level of competence. Suggested prereq: ENGL 1200 or equivalent.

THTR 2543-1. Accents and Dialects. An intensive workshop designed to explore the various ways in which the voice is adapted for the creation of characters on stage. Suggested prereq: THTR 2554.

THTR 2554-3. Voice and Diction. Studio/workshop class designed to introduce the physiology and theory of vocal production, to analyze specific problems in voice and diction in order to develop the actor's vocal instrument.

THTR 2604-2. Stage Movement. Analysis and practice of stage movement, including basic techniques in gesture and mime as related to proscenium, thrust, and arena staging.

THTR 2605-3. Physical Conflict in the Theatre, a Non-Violent Approach to Stage Violence. Training in basic unarmed combat techniques, focusing on accuracy and safety. The class will conclude with training in the Elizabethan rapier. Actors will complete the class with a basic understanding of technique and vocabulary in armed and unarmed stage combat.

THTR 2663-3. Jazz, Tap, Theatre Dance. The course explores theatrical movement...
in a theoretical as well as a performance context. Movement for the performing artist is first explored through improvisation and then studied in the theatre dance forms of jazz and tap through practical experience and analysis of choreographic styles. The course is open to participants of all disciplines and no dance/theatre experience is necessary.

THTR 2732-4. Acting I. Study and workshop experience in basis techniques of state movements and role portrayal including improvisations, psychological gesture, body and mind concentration, and vocal gesturing. Several short monologues and duets are designed to solve particular characterization problems.


THTR 2791-2 to 4. Departmental Production. Participation in departmental production. Credit hours (from 2 to 4) will be determined by faculty advisor and are dependent on level of responsibility in the production.

THTR 2792-2 to 3. Multi Arts Performance. Participation in an integrated arts performance piece. Credit hours (from 2–3) will be dependent on level of responsibility in the production.

THTR 2793-1 to 2. Affiliated Theatre. Participation in a production at an affiliated theatre in the Denver metro area. Credit hours (from 1–2) will be determined by faculty advisor and are dependent on level of responsibility in the production.

THTR 2794-1 to 2. Second Stage Production. Participation in a second stage production. Credit hours (from 1–2) will be determined by faculty advisor and are dependent on level of responsibility in the production.

THTR 2795-2-4. Theatre Practice: Management. Practicum component of the theatre emphasis requirement through participation in stage management, box office management, or public relations for an approved production. Credit hours (2-) will be determined by faculty advisor and are dependent on level of responsibility in the production.

THTR 2803-3. History of Theatre. Introductory survey course in theatre history which examines major trends in the writing and production of plays from ancient Greece to contemporary time.

THTR 2935-2-4. Management Internship. Practicum component of the theatre emphasis requirement through participation in a management internship at a designated cultural facility in the Denver metro area. Credit hours (from 2–4) will be determined by faculty advisor and are dependent on level of responsibility in the internship.

THTR 3202-3. Drama of Discrimination. An investigation of the creation and reinforcement of gender, ethnic and racial stereotypes in film and television in the United States. The course will explore how popular images are created by writers, directors and performers and become "reality" for the audiences for which they are intended.

THTR 3504-3. Oral Interpretation of Poetry. Performance and criticism of primitive poetry, concrete poetry, the ballad, the sonnet, and various modern forms. Each performance is designed to solve a particular problem.

THTR 3667-3. Theatre for Children. A study of the processes involved in creating substantial theatre for children, including an examination of various sources for dramatizing children's stories, fairy tales, poems, and existing scripts. This course includes a full production of a children's play to be performed by members of the class before audiences of children. Prereq: THTR 1701 or consent of instructor.

THTR 3706-4. Scene Design. An introduction to the principles and practices of scenic design for the theatre. This course will emphasize textual analysis, the aesthetic and practical elements of design, design development, and theatrical graphics. Requirements will include related production experiences with departmental, second stage, or directing class productions. Prereq: THTR 2761 or equivalent.

THTR 3734-4. Acting II. Structured improvisations and fully prepared scene studies leading to advanced work in characterization. Methods of discovering and utilizing the range of creative potential in play-scripts will receive particular emphasis. Prereq: THTR 2732.

THTR 3741. Directing I. A study of the director's function in the live theatre with particular emphasis on play analysis and the relationship of creative communication existing between the director and the production team. Workshop experiences include experimental scene work for prosenium, thrust and arena staging. Prereq: THTR 2732 or equivalent.

THTR 3806-4. Lighting Design. An introduction to the history, theory, practice, and equipment for lighting performing arts productions. This course will emphasize textual analysis for lighting design, basic electricity, lighting control and equipment, safety practices and, light graphics. Requirements will include related production experiences with departmental, second stage and directing class productions. Prereq: THTR 2761 or equivalent.

THTR 3939-1-3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: junior standing and 2.75 grade-point average.

THTR 3980-1-3. Topics in Theatre. Various topics in the study of the theatre of special interest to non-majors as well as majors with an emphasis in theatre.

THTR 3981-1-3. Topics in Theatre. Various topics in the study of the theatre of special interest to majors with an emphasis in theatre, and often required for one or more areas of focus.

THTR 3982-1-3. Topics in Theatre: Honors in Humanities Cluster. Specific topics courses designed as cluster courses for the Honors in Humanities program. Titles rotate on a regular basis and include Women in Theatre, Medieval Theatre, Theatre of Revolt, and Radicalism in Drama.

THTR 4525-3. Theatre Criticism. A study of the role of the critic in the development of the theatre with special focus on the practice of dramatic analysis and critical writing about plays and theatrical productions. Prereq: THTR 1701 or equivalent and 12 upper division hours in theatre.

THTR 4585-3. Playwriting: the Long Form. Writing workshop in full-length plays with special emphasis on production demands. Prereq: THTR 4750 or consent of instructor.

THTR 4706-3. Design Perspectives: Topics. A special topics investigation of trends in production design and experimental practices in traditional and non-traditional endeavors.

THTR 4734-4. Acting III. Advanced and intensive work in scene study to include practice in a variety of styles such as Elizabethan, Restoration, Comedy of Manners, and Musicals. The focus of the course is the effective use of language and the selection and integration of physical and vocal performance choices. Prereq: THTR 3734 or consent of instructor.

THTR 4744-4. Advanced Directing. Designed to present more complex, analytical, production design and rehearsal process problems for the advanced directing student. Included are concentrations in the history of directing, contemporary directing practice, working with non-realistic theatrical dynamics, experimental rehearsal strategies, and experimental sound and lighting design.
THTR 4756-4. Advanced Scenic Design. Class projects will stress development of graphic techniques, exploration of design styles, and the integration of related theatrical design areas. There will be concentration on scenic design for various theatre forms and performing arts. Requirements may include related production experiences with departmental, second stage, affiliated off-campus theatres, and directing class productions.

THTR 4790-1-4. Theatre Practice. Advanced practicum in production work for an approved production. Credit hours (1-4) will be determined by faculty advisor and are dependent on level of responsibility in the production.

THTR 4836-4. Advanced Lighting Design. Theory and practice for the adaptation of production lighting to various theatre forms and performance types will be emphasized. Projects will provide opportunity for the development of interpretation and implementation processes. Requirements may include production experiences with departmental, second stage, affiliated off-campus theatres, and directing class productions.

THTR 4987-3. Applied Theatre Perspectives: Topics. A special topics investigation of creativity, communication, counseling, and theatre for families and young adults as well as an exploration into the potential of oral history, folklore, and non-performance oriented theatre techniques.

UPPER DIVISION/GRADUATE LEVEL

Students enrolled at the 5000 level may expect additional work and evaluation commensurate with graduate standards.

THTR 4201/5201-3. Production Process. An overview exploration of the design areas of the performing arts designed for majors in all areas of focus and non-majors with some background in theatre. The contribution of major design components (scenic, lighting, costume, and sound) will be examined in theory and practice. Lab requirements will involve participation in departmental activities. Attendance and review of productions will be scheduled. Prereq: THTR 1701 or equivalent and 12 upper division hours in theatre.

THTR 4357/5357-3. Creative Drama. The study of creativity, its role and application in dramatics, and the manner in which creative dramatics assist in the growth and development of children and youth.

THTR 4581/5581-3. Playwriting: The Short Form. Writing workshop in one-act plays with special emphasis on the demands of production: space, acting, staging conventions and techniques. Prereq: consent of instructor.

THTR 4667/5667-3. Theatre for Children. A study of the processes involved in creating designed substance theatre for children, including an examination of various sources for dramatizing children’s stories, fairy tales, poems and existing scripts. This course includes a full production of a children’s play to be performed by members of the class before audiences of children. Prereq: THTR 1701 or consent of instructor.

THTR 4705/5705-3. American Theatre History. An investigation of American theatres, methods of presentation, audiences, actors, acting, and economics from 1700 to the present, emphasizing contemporary practices and values as a way of understanding and appreciating the place of theatre in this country as it has evolved and developed. Prereq: THTR 1701 or 4781 or consent of instructor.

THTR 4781/5781-3. Drama Theory and Criticism. Examination of critical and theoretical ideas from Aristotle to the present with special emphasis on the development of each student’s own evaluative criteria.

THTR 4805/5805-3. Historical Perspectives: Seminar Topics. An investigation of theatres, methods of presentation, audiences, actors and acting from primitive times to the present, emphasizing perception of contemporary practice and values as a way of understanding and appreciating the place of theatre in historical contexts. Prereq: THTR 1701 or 4781 or consent of instructor.

GRADUATE LEVEL


INDEPENDENT STUDY


THTR 2840-Variable Credit. Independent Study. (Undergraduate).


THTR 5640/6640-Variable Credit. Independent Study (Graduate). Prereq: written consent of supervising instructor.

COLLEGE OF LIBERAL ARTS AND SCIENCES

ANTHROPOLOGY

Chair, Anthropology and Sociology: Wanda I. Griffith

Undergraduate Advisor: Linda Curran-Everett

Graduate Director (Anthropology & Sociology): Richard H. Anderson

Office: NC 3012

Telephone: 556-3557

Faculty: Professors: Lorna G. Moore, Duane Quaill

Associate Professors: Craig R. Janes, Janet R. Moore

Assistant Professors: Kitty Corbett, Linda Curran-Everett, Ruben Mendoza


Adjoint: Jack E. Smith

Emeritus: Robert A. Aldrich

Undergraduate

Anthropology is the study of human origins and evolution, present conditions of human life, and future prospects. It considers human beings as biological and social entities and seeks to explain both diversities and commonalities of peoples and cultures. For undergraduates, anthropology provides a rich overview of human life. It also introduces them to a variety of skills and practical research methods which anthropologists apply in laboratory and field studies of the ecological constraints on human existence, the cultural bases of individual and organizational behavior, and, in general, problems and circumstances relating to the maintenance of healthy, productive human action in the world today.

Anthropological training provides entry to a variety of careers in archaeology, museology, education, community service, public administration, and international affairs and business. The specific skills which it provides are useful to students of environmental design, city planning, community development, the medical and nursing professions and allied health sciences, law, public affairs, and secondary education.

Requirements for the Major. Undergraduates majoring in anthropology must complete a minimum of 30 semester hours in anthropology with grades of C or better.
Sixteen hours must be upper division. Fifteen hours must be taken from CU-Denver faculty. Not more than 48 hours in the major will count toward the 120-hour graduation requirement.

The following courses are required, or competence in course content must be demonstrated: (Note that all upper division courses have lower division prerequisites.)

1. ANTH 1031-3. Biological and Cultural Evolution
   ANTH 2102-3. Culture and the Human Experience

2. Three of the following:
   ANTH 2302-3. Introduction to Archaeology
   ANTH 3103-3. Human Culture
   ANTH 3121-3. Nature of Language
   ANTH 3301-3. Archaeology and Prehistory
   ANTH 3501-4. Biological Anthropology

3. ANTH 4801-3. Senior Seminar: The Anthropological Perspective

4. In addition, ANTH 4051-4, Quantitative Methods in Anthropology, is highly recommended for those seeking a career or further graduate training in the social and behavioral sciences.

All of the above courses are offered annually, and ANTH 1031-3 or ANTH 2102-3 are usually offered in the summer as well.

**Requirements for the Minor:** For an undergraduate minor in anthropology, a minimum of 15 semester hours in anthropology must be completed with an average grade of C or better. Six of the 15 hours must be upper division and 9 must be taken from CU-Denver faculty. Courses taken must include at least three from the following list: (Note that all the 3000-level courses have prerequisites.)

ANTH 1031-3. Biological and Cultural Evolution
ANTH 2102-3. Culture and the Human Experience
ANTH 2302-3. Introduction to Archaeology
ANTH 3101-3. Human Culture
ANTH 3121-3. Anthropology of Communication
ANTH 3301-3. Archaeology and Prehistory
ANTH 3501-4. Biological Anthropology

**Departmental Honors:** Students wishing to graduate with departmental honors in anthropology (cum laude, magna cum laude, and summa cum laude) must have at least a cumulative grade-point average of 3.2 and a 3.2 or higher in anthropology. Additional requirements are available in the anthropology/sociology office. Qualified students are encouraged to apply for the Honors program no later than the beginning of their senior year.

**Area Requirements:** Anthropology courses may satisfy University and College requirements in the behavioral sciences.

**Graduate:**

The unique intellectual challenge of anthropology is to integrate diverse practical study approaches and to synthesize knowledge from both biological and sociocultural research domains in seeking solutions to problems faced by human societies in today's world. Individual courses in biological and cultural anthropology, archaeology, primatology, and linguistics cut across lines which traditionally have separated the humanities, the social sciences, and the natural sciences. Because of this integrative perspective on the human condition and the training provided in objectively assessing cultural patterning and social interaction, an anthropology M.A. provides a versatile base for professional career development.

The CU-Denver Department of Anthropology offers an M.A. degree in five areas of concentration: medical anthropology, applied anthropology, foundations of human behavior, archaeology and museum studies, and general anthropology. Each of the five concentrations begins with a common core of classes designed to acquaint the student with the theoretical perspectives and methodological orientations within anthropology.

**Common Core Courses:**

All students will be required to take the following five courses: (Note: courses designated with Roman numerals I and II must be taken in sequence.)

ANTH 4053-4. Quantitative Methods in Anthropology
ANTH 6103-3. The Ethnographic Tradition I
ANTH 6113-3. The Ethnographic Tradition II
ANTH 6503-3. Contemporary Physical Anthropology I
ANTH 6513-3. Contemporary Physical Anthropology II

**Areas of Concentration:**

Beyond the common core, students wishing to specialize in medical anthropology, applied anthropology, foundations of human behavior, or archaeology and museum studies, must complete at minimum an additional 6 hours of required course work. Students may then choose from a range of electives to round out their program. Students wishing to complete the general anthropology track are required to take only the common core courses, beyond which they simply choose the appropriate number of electives. The areas of concentration and course requirements for completing a concentration are as follows:

**MEDICAL ANTHROPOLOGY COURSES**

ANTH 5014-3. The Ecological Perspective in Medical Anthropology
ANTH 5024-3. Comparative Health Systems

**APPLIED ANTHROPOLOGY** offers theoretical and research training toward the application of anthropological concepts and methods to analyses of community or neighborhood culture, social organization, environment, and their interrelations. An emphasis is placed on the relevance of such applications for community action, problem-solving, planning, and policy decisions. Internships may be arranged in association with faculty.

**APPLIED ANTHROPOLOGY COURSES**

ANTH 5125-3. Applied Cultural Anthropology
ANTH 5115-3. Urban Anthropology
SOC 5260-3. Seminar: Urban Sociology

**FOUNDATIONS OF HUMAN BEHAVIOR** is for students who wish to pursue the study of human behavior from an evolutionary biological base, with emphases on behavioral ecology and sociobiology. The core requirements for this specialty track are anthropologically based courses in
primate and human behavior and ethnology. These may be supplemented by electives from within the department and from related disciplines depending on specific goals. The Certificate in Animal Behavior Studies, comparative social organization, kinship and household, social cognition, or psychological anthropology are concentrations within this field.

FOUNDATIONS OF HUMAN BEHAVIOR COURSES

ANTH 5526-3. Seminar: Primate Behavior

ARCHAEOLOGY AND MUSEUM STUDIES is for students interested in the scientific study of prehistory, cultural evolution, cultural development and cultural materials or artifacts. The core requirements for this specialty are courses in archaeological method and theory combined with topical and geographic area courses in archaeology and museum studies. These courses may be supplemented with electives from within the department, the Department of Geology, and internships at one of the area's many museums.

ARCHAEOLOGY AND MUSEUM STUDIES COURSES

ANTH 6307-3. Contemporary Perspectives in Archaeology
ANTH 6317-3. Archaeological Research Design and Analysis

Students must also take a minimum of 6 credit hours in archaeology/museum Studies area courses (e.g., Archaeology of Middle America, Archaeology of the American Southwest I & II).

Students interested in careers in archaeology are urged to complete a minimum of 6 credit hours in ANTH 5910-3, Field Experience in Archaeology.

GENERAL ANTHROPOLOGY provides students with a solid background in the theory and methodology of anthropology. This is particularly useful for students planning to pursue the Ph.D. and for those who are well established in their careers and who wish to add the skills and knowledge available within the anthropological perspective. The latter might include people in business and management, the helping professions, and primary and secondary school teachers. Students in general anthropology take the common core plus selected relevant courses according to their orientation.

Requirements for Admission

Application is open to holders of a B.A., B.S., or higher degree in any field. Acceptance is competitive. It is based on an undergraduate record of good quality (3.00 or better grade-point average for all undergraduate studies), prior training in anthropology (18 semesters minimum), GRE verbal, analytic, and quantitative scores, three letters of recommendation, and a statement of the applicant's purpose in pursuing the degree. Two copies of transcripts from all undergraduate institutions attended are also required. A student without prior anthropology training may be admitted to the program but may be required to make up deficiencies without graduate credit or may choose to gain the necessary background as a degree student before beginning the graduate program. With this flexibility in mind, applications are welcome from individuals pursuing particular interests and careers, especially in fields pertaining to the medical anthropology and applied anthropology areas. Departmental deadlines for receipt of all application materials are April 15 for fall entrance and October 15 for spring admission.

Plan of Study

Students pursuing the M.A. degree under Plan I must take 30 semester hours of course work, of which 6 will be allocated to a thesis through the mechanism of thesis hours. The thesis may consist of a report of original research, a comprehensive evaluation of existing research, or the report of an internship experience, which disciplinary theory is applied to a practical question or series of practical questions.

Students pursuing the M.A. degree under Plan II must take 36 hours of course work. All students must pass a 6-hour comprehensive examination taken ordinarily in the fourth semester of full-time graduate study, and no later than the fifth semester of full-time graduate study. Under both Plan I and Plan II, students may apply up to 9 hours of study in disciplines outside of, but related to, the discipline of anthropology with the approval of their graduate advisor. Such courses must be taken at the 4000 level or above. A minimum of two full semesters devoted to advanced study is required by The Graduate School; no more than 3 years for attaining the M.A. degree is strongly encouraged. Ordinarily, two years of full-time participation is required to complete the M.A. degree.

Further information concerning admission, programs of study, or other items of interest may be obtained by writing the Director of Graduate Studies, Department of Anthropology, University of Colorado at Denver, Campus Box 105, P.O. Box 173364, Denver, CO 80217-3364. For general Graduate School requirements and application information, see The Graduate School section of this catalog.

Courses

ANTH 1031-3. Biological and Cultural Evolution. Fall, Spring. The study of human origins and the prehistory of humankind, with emphasis on physical anthropology and archaeology. Consideration of our own species, Homo sapiens, in relation to contemporary nonhuman primates as well as ancestral hominid species. Culture is treated in this course as a primary human adaptation. ANTH 2102 treats in detail cultural diversity among living peoples. ANTH 1031 should be taken before, or concurrently with ANTH 2102.

ANTH 2102-3. Culture and the Human Experience. An application of the concept of culture to several aspects of the human experience, including gender relations, emotion and personality, cognition, language, health and healing, and economic behavior. In exploring these dimensions of the human experience, the course will focus on selected cultures from each of the world's major geographic areas.

ANTH 2123-3. Sex and Gender. The study of sex as a factor in human evolution, contemporary biological variation, and in the allocation of roles and responsibilities in different cultures. Special emphasis will be placed on roles and attributes of women.

ANTH 2302-3. Introduction to Archaeology. An introduction and exploration of the theories, methods, practices, and practitioners of contemporary archaeology. Course content will review major contributions, significant archaeological excavations and projects, and key principles, that dominate current thinking in prehistoric and historic archaeology. Topics to be explored include: categories of archaeological evidence, preservation, environmental reconstruction, dating techniques, social archaeology, tool technologies, experimental archaeology, and conservation. Flint knapping, stone tool use, and other prehistoric technologies will be demonstrated.

in anthropology, on an introductory level, such as aging, race and prejudice, science and human values, warfare and aggression, ethnicity, cultural diversity through film, myth and folklore, anthropological approaches to world problems, and Colorado prehistory. The specific topic explored in a given semester is to be announced in the Schedule of Classes.

**ANTH 3002-3. Health and Culture.** Why are we healthy and if sick, what do we do to get well? Health and disease are viewed to be a consequence of complex interactions between people, the environments in which they live, the agents of disease, and the systems of treatment and prevention developed by culture. The biological and cultural determinants of health and disease are explored in our society and cross-culturally.

**ANTH 3101-3. Human Culture. Spring.** Covers current theories in cultural anthropology and discusses the nature of fieldwork. Major schools of thought and actual field studies are explored. An emphasis also is placed on anthropological data gathering, analysis, and writing. Prereq: Introductory course in cultural anthropology.

**ANTH 3121-3. Anthropology of Communication.** The origin and evolution of language; its special relationship to the human brain; and communication systems of animals, especially nonhuman primates. Other topics include language acquisition, language pathology and the study of nonverbal communication. Prereq: Introductory course in cultural anthropology.

**ANTH 3142-3. Cultural Diversity in the Modern World.** An in-depth analysis of the phenomena of culture and application of the culture concept to understanding cultural diversity in the modern world. The course will apply the concept of culture to several basic aspects of human social life, for example: social class and gender relations, ethnicity, racism and sexism, education, health, and economic behavior. Students will explore these issues in the context of case studies of particular groups and/or communities, focusing primarily on the diversity of cultural expression in the contemporary U.S.

**ANTH 3180-3. Organizational Culture.** Examination of concepts of culture fundamental to anthropological research in human organization and to current theories of organizational management. This course is designed for the professional student, to provide an appropriate study base for those engaged in and affected by day-to-day administrative applications of ideas drawn from anthropological theory and research.

**ANTH 3301-3. Archaeology and Prehistory.** An exploration of the first 3.5 million years of human cultural development that examines the prehistory of Africa, Asia, Europe, and the Americas. Patterns and processes that underlie the earliest hominid expansion out of Africa, tool use, origins of fire, the peopling of the Americas, the development of metallurgy, the domestication of plants and animals, and the rise of cities and the state, will be examined. Emphasis on both regional developments and landmark projects that have helped clarify humankind's progressive achievement of civilization. Prereq: Introductory course in archaeology.

**ANTH 3320-3. Prehistoric Europe and the Mediterranean.** A survey of European and Mediterranean prehistory that will explore developments associated with the upper Paleolithic, Mesolithic, Neolithic through Copper, Bronze, and Iron Age periods of prehistoric Europe. Core topics include post-Pleistocene adaptations, Mesolithic hunter-gatherers, the first farmers of the Mediterranean, the expansion of farming into Europe, megaliths, Eastern European developments, the Aegean, Stonehenge, Bronze Age societies, steppe and Villanovan, Etruscan, and Celtic peoples, and Iron Age settlements.

**ANTH 3340-3. Pre-Columbian America: Archaeology of the New World.** A study of the native peoples of the New World from the time of the earliest hunters to the rise of agriculture and civilization. Considerations of the origin and conditions of a broad sample of societies drawing upon both archaeological and ethnographic information, and the general impact upon new world societies of Europeans after Columbus reached the New World.

**ANTH 3501-4. Biological Anthropology.** Human biological evolution from primate ancestors and fossil hominids to modern homo sapiens; genetic mechanisms of evolution; genetic and physiological variation in contemporary human populations. Three hours of lecture and one 1-hour lab each week. Prereq: Introductory course in biological/physical anthropology.

**ANTH 3512-3. Issues in Human Evolution.** An anthropological approach to the study of human lifeways as the outcome of both cultural and biological evolution. In this course Homo sapiens is treated as an animal species (just another unique species) which occupies a cultural niche. Prereq: introductory course in biological/physical anthropology.

**ANTH 3520-3. Foundations of Primate Behavior.** Study of nonhuman primate behavior with emphasis on understanding social behavior, ecology, and issues related to human evolution. Prereq: Introductory course in biological/physical anthropology.

**ANTH 3540-3. Foundations of Human Behavior.** Human behavior in comparative and evolutionary perspective, emphasizing: 1) social cognition in nonhuman primates, 2) application of ethological and sociobiological principles to the study of human action, 3) problems and methods of nonobtrusive data collection in natural settings. This course is designed for both majors and non-majors as an introduction to human ethology. Prereq: An introductory course in anthropology or another of the behavioral sciences.

**ANTH 3910-3. Cross-Cultural Field Experience.** Intensive contact with another culture through supervised travel in a country other than the United States. Pre-trip orientation lectures; in-country lectures by local resource people and supervising CU-Denver faculty who will also evaluate written reports by the students.

**ANTH 3939-1 to 3. Internship/Cooperative Education.** Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: Junior standing and 2.75 grade-point average.

**ANTH 4000-1 to 3. Special Anthropological Problems.** For majors in anthropology; others by consent of instructor. Designed to give advanced students a chance to evaluate critically some practical or theoretical problems under supervision, and to present results of their thinking to fellow students and instructors to critical evaluation. Prereq: Consent of instructor.

**ANTH 4010-3. Biocultural Foundations of Health.** Concerned with the underlying biological and cultural determinants of health throughout the human life cycle in cross-cultural perspective. This is the first of the two-course sequence in medical anthropology. The second is ANTH 4020, comparative medical systems. Prereq: Introductory courses in biological and cultural anthropology.

**ANTH 4020-3. Comparative Health Systems.** Systems of disease etiology and classification, the therapeutic encounter, varying roles of healer and patient, the cultural bases of healing systems, prevention, and the relationship of healing systems to other institutions in culture will be explored. Course will focus on U.S. as well as on Western systems. Prereq: Introductory course in cultural anthropology.
ANTH 4051-4. Quantitative Methods in Anthropology. A survey of the ways of deriving meaning from anthropological data by numerical means including, but not confined to, basic statistical procedure. Prereq: college algebra or its equivalent
ANTH 4801-3. Senior Seminar: The Anthropological Perspective. Designed to build on specialized course work in the subdisciplines of anthropology, this course will emphasize the basic concepts that integrate and unite the discipline and give it its unique perspective. These are the concepts of "culture," "adaptation," and "human evolution." In the last several weeks of the course, students will consider the applicability of the anthropological perspective to specific human issues. Seminars will center on the critical examination and discussion of presentations made by department faculty and graduate students. Prereq: junior standing and course work equivalent to a minor in anthropology.

UPPER DIVISION/GRADUATE LEVEL

Students enrolled at the 5000 level may expect additional work and evaluation commensurate with graduate standards.


ANTH 4110/5110-3. Urban Anthropology. An anthropological approach to the comparative study of factors influencing urbanization in different parts of the world along with the implications of environments, economy, values, and psychology of urban living in general. Cross-cultural, but with emphasis on the modern Western world. Prereq: introductory course in cultural anthropology.

ANTH 4120/5125-3. Applied Cultural Anthropology. Concept, methods, and problems in the application of anthropology to community and institutional organization, development and administration; exemplified through analysis and discussion of U.S. and cross-cultural case materials. Urban and medical problems as well as ethical issues to be included. Prereq: introductory course in cultural anthropology.

ANTH 4130/5130-3. Comparative Religious Systems. A cross-cultural analysis of religious belief and behavior. Emphasis will be placed on religions found among non-Western cultural groups, and will include consideration of how major religions of the world are manifested on local levels. Prereq: introductory course in cultural anthropology.

ANTH 4140/5140-3. Gifts, Exchange and Traditional Production. This course will explore the legacy of Fourth World economic systems. It will make use of the vast literature in anthropology to outline powerful alternative models of economic behavior to those offered by classical economics. This course explores the logic of gift exchange, pre-capitalist markets, and traditional production. Prereq: introductory course in cultural anthropology.

ANTH 4150/5150-3. Cultural Ecology. The chief concern of this course is the relationship between ourselves and our surroundings, the very immediate ways in which the environments in which we live affect us. The view is of ourselves as a part of, not apart from, these environments. Prereq: introductory course in cultural anthropology.

ANTH 4160/5160-3. Language and Culture. The relationship of language to human behavior. The typological classification of languages, the study of linguistic universals, and the evolutionary implications of such studies. Prereq: introductory course in cultural anthropology or sociolinguistics.


ANTH 4180/5180-3. Power: The Anthropology of Politics. Analysis of institutions of political control both comparatively and from an evolutionary perspective; the interconnections between political and other aspects of human cultural systems. Prereq: introductory course in cultural anthropology.

ANTH 4190/5190-3. Family Dynamics. The course examines processes of change in values, roles, and relations involved in marriage and family structure, using contemporary cross-cultural materials leading to understanding of such problems as generation gap and sex role change. Special attention is given to changing structure of authority, economics, and the emotional components associated with marriage and family life of today's America. Prereq: introductory course in cultural anthropology.

ANTH 4200/5200-3. The Anthropology of Gender. A comparative analysis of gender-based status and social roles. It examines in cross-cultural context the relations among women's status and subsistence and reproductive activities, the division of labor by sex, ideology, and political economy.

ANTH 4220/5220-3. Culture and Community. A presentation of the community study method from the perspective of anthropology and as a widely applicable research technique in planning, development, and other areas of public affairs. Also includes analyses of case studies and student field research. Prereq: introductory course in cultural anthropology.

ANTH 4240/5240-3. Psychological Anthropology. A sampling of contemporary work in psychological anthropology, including culture and personality, culture and cognition, altered states of consciousness, cultural and its diagnoses and cure, the ethnography of experience, and psychological dimensions of social change. Prereq: introductory course in cultural anthropology.

ANTH 4300/5300-3. Archaeology of the American Southwest I: Mogollon and Hohokam. Considers the origins, characteristics, and interrelationships of the Mogollon, Hohokam, and the cultures of adjacent Mexico. Each of these cultures represents an adaptive response to specific environmental conditions. Interactions with the Anasazi culture to the north are explored. Prereq: introductory course in archaeology.

ANTH 4310/5310-3. Archaeology of the American Southwest II: Anasazi. Considers the origins, characteristics, adaptive responses, and interrelationships of the Anasazi culture and its variants found in the Four Corners area of Arizona, Colorado, New Mexico, and Utah. Interactions with the Mogollon and Hohokam cultures to the south and Fremont culture to the north will be explored. Prereq: introductory course in archaeology.

ANTH 4320/5320-3. Archaeology of Middle America. A survey of the major prehistoric and protohistoric cultures and societies of that area of Mexico and Central America identified with the evolution of Mesoamerican civilization. Major topics include early human colonization of the Americas, the domestication of plants and animals, the emergence of regionally based cultures and societies, trade and exchange, and the evolution of urbanism and the state. Primary emphasis on such ancient cultures and societies as those of the Olmec, Zapotec, Maya, Teotihuacan,
Toltec, and Aztec. Prereq: introductory course in archaeology.

ANTH 4340/5340-3. Archaeology of the Great Pains. Described as the finest cavalry the world has ever seen, the Plains Indians were the latest in a line of peoples who adapted to life on the Great Plains. The last 12,000 years provide a picture of challenging cultural adaptation through time. Prereq: introductory course in archaeology.


ANTH 4390-3. Research Methods in Archaeology. Methods and theories of archaeology are used to scrutinize the collection and interpretation of data and the relationships of archaeology to other disciplines. Course content will vary slightly each time, offered in response to student needs and the availability of projects; for example, laboratory work, urban excavation, survey and mapping, etc., but the core material will be learning and criticizing basic archaeological assumptions. Prereq: introductory course in archaeology.


ANTH 4520/5520-3. Human Biological Variation. Human biological variation and adaptation, considered from an evolutionary perspective. How we measure and classify human variation often affects the conclusions we draw. We will also consider the causes and maintenance of human variability and adaptability, including cultural and social factors in the genesis and maintenance of normal and abnormal traits. Prereq: introductory course in biological or physical anthropology.

ANTH 4560/5560-3. Human Ecology. A study of demographic and ecological variables as they relate to humans. Aspects of natural selection, overpopulation, and environmental deterioration will be considered. Prereq: introductory course in biological or physical anthropology.

ANTH 4700/5700-3. Ethnography of the American Southwest. Geographic affiliations, culture, history, traditional ways of life, and culture change in the American Southwest.


ANTH 4740/5740-3. Ethnography of Mexico and Central America. Geographic affiliations, culture, history, traditional ways of life and culture change in Mexico and Central America.

ANTH 4760/5760-3. Contemporary American Indian Cultures. Beginning with the historical background on American Indian acculturation and persistence, but emphasizing present-day relations between Indian communities and the dominant society, stressing conditions and events in Denver and the Southwest generally.

ANTH 4780/5780-3. Ethnography of the South Pacific. An exploration of the native cultures of Oceania, including those of Hawaii, Samoa, New Guinea, Fiji, and the many islands of Micronesia. Emphasis is placed on the ways of life of the indigenous population, their relations with each other, and the effects of culture change in recent times.

ANTH 4910/5910-3 to 6. Field Experience in Archaeology. Students will participate in archaeological field research and data recovery, and will conduct laboratory analysis of materials recovered in the field. Emphasis will be placed on excavation technique and accuracy of record keeping. Prereq: introductory course in archaeology.

GRADUATE LEVEL


ANTH 5014-3. The Ecological Perspective in Medical Anthropology. Concerned with the underlying biological and cultural determinants of health throughout the human life cycle in cross-cultural perspective. This is the first of the two-course sequence in medical anthropology. The second is ANTH 5024, comparative medical systems. Prereq: introductory course in biological/physical anthropology.

ANTH 5024-3. Comparative Health Systems. Systems of disease etiology and classification, the therapeutic encounter, varying roles of healer and patient, the cultural bases of healing systems, prevention, and the relationship of healing systems to other institutions in culture will be explored. Course will focus on U.S. as well as on Western systems. Prereq: introductory course in cultural anthropology.

ANTH 5053-3. Quantitative Methods in Anthropology. A survey of the ways of deriving meaning from anthropological data by numerical means including, but not confined to, basic statistical procedure. Prereq: college level algebra.

ANTH 5526-3. Seminar: Primate Behavior. Examination of morphology and behavior of selected primate species from a comparative evolutionary point of view, with emphasis on social behavior, ecology, and issues relating to human evolution. Prereq: introductory course in physical/biological anthropology.


ANTH 6020-3. Interdisciplinary Seminar. A consideration of interdisciplinary problems that involve anthropology and related fields such as history, the behavioral disciplines, and the natural sciences.

ANTH 6040-3. Topics in Medical Anthropology. A flexible seminar format for dealing with topics of special interest in medical anthropology on an advanced graduate level. Topics to be considered will vary from semester to semester.

ANTH 6053-3. Qualitative Data Analysis. Much of the data collected in the course of research in anthropology and related disciplines are composed of texts of written or recorded material. This course focuses on the systematic and computer-aided qualitative analysis of real texts. Emphasis will be placed on a step-by-step and in-depth discussion of the elements of qualitative analysis, including domain and theme coding, sorting and retrieval, inductive analysis, and methods for writing up results. Prereq: computer literacy.

ANTH 6103-3. The Ethnographic Tradition: Culture Theory. An in-depth inquiry into important theories in cultural anthropology through extensive primary source reading. Practice in formulating theory, critical thinking, and theoretical writing will be emphasized. This is the first course in a two-course required graduate sequence, and will be offered every
third semester. Prereq: undergraduate course work in cultural anthropology.

ANTH 6113-3. The Ethnographic Tradition II: Research Design and Methodology. An in-depth introduction to the methods and techniques used in cultural anthropological fieldwork. Course emphasizes the relationship between theory and data collection, in particular the logical derivation of testable questions, hypothesis testing, and theory building. Special attention is given to a field work project as a practical training experience and as an application of classical methodologies. Prereq: ANTH 6103.

ANTH 6120-3. Seminar: Comparative Social Systems. Inquiry into current cross-cultural research on the structure and function of social units, overall societal integration, and processes of change in social organization. The emphasis will be on contemporary complex societies, urban, industrial, and alternative systems. Prereq: undergraduate course work in cultural anthropology or consent of instructor, and graduate standing.

ANTH 6307-3. Contemporary Perspectives in Archaeology. Consideration of contemporary theoretical and methodological perspectives in archaeology. Prereq: undergraduate course work in archaeology.

ANTH 6317-3. Archaeological Research Design and Analysis. An examination of the methods and techniques used in archaeological field work, including theory-building, hypothesis testing, and the assumptions, inferences, and implications that underlie archaeological approaches and interpretations. Core materials will emphasize the learning and critique of basic archaeological assumptions and the methods and theories used to scrutinize the collection and interpretation of data. Topics include chronometric applications, paleo-environmental reconstruction, regional approaches, cultural resource management, and the design of archaeological surveys. Prereq: ANTH 6307 or equivalent.

ANTH 6502-3. Contemporary Theory in Biological Anthropology.

ANTH 6503-3. Contemporary Physical Anthropology I: Theory and Methods. The role and application of theory in physical anthropology, with particular attention to the relation between developments of theory and advances in methods and technology. This is the first course in a two-course required graduate sequence, and will be offered every third semester. Prereq: undergraduate course work in biological/physical anthropology or consent of instructor, and graduate standing.

ANTH 6513-3. Contemporary Physical Anthropology II: Issues and Applications. A state-of-the-art overview of the workings of physical anthropology, through analysis of select representative problems and issues. Focal areas of research and theory will vary from year to year. This is the second course in a two-course required graduate sequence, and will be offered every third semester. Prereq: ANTH 6503 and graduate standing.

ANTH 6520-3. Seminar: Selected Topics in Physical Anthropology. A flexible seminar format for dealing with topics of special interest in physical anthropology on an advanced graduate level. Topics will vary from semester to semester. Examples include: anthropology of nutrition, paleoecology, primate evolution, field experience in paleontology, advanced osteology, and advanced human ecology. Prereq: undergraduate work in biological/physical anthropology and graduate standing.

ANTH 6830-1 to 6. Guided Research. Directed individual research, field or library, employing specific anthropological theories, methods, and techniques, any subfield. Consent of instructor required.


INDEPENDENT STUDY

ANTH 4840-1 to 3. Independent Study. Directed study based on a specific subfield of anthropology. Consent of instructor required.

ANTH 5840-1 to 6. Independent Study. Directed study based on a specific subfield of anthropology. Consent of instructor required.

BASIC SCIENCE, MASTER OF

Director: Zenas Hartvigson
Office: UCD 530A
Telephone: 556-3075

This multidisciplinary program leads to the Master of Basic Science (M.B.S.) degree. It provides an opportunity to extend or broaden training in mathematics, computer science, biology, chemistry, geology, and physics.

The program is designed as a career enhancement degree for professionals such as government and industrial scientists, teachers, engineers, and business persons.

CU-Denver strives to offer its graduate students a maximum of flexibility in the design of their programs. The M.B.S. degree is less restrictive in its requirements than traditional M.S. programs, and can be planned to meet specific needs or individual preferences. Students design their own degree plans with an academic advisor to meet program requirements.

Students in the program have the opportunity to take courses designed for professional growth in their area of interest. For the teaching professional, several courses relating to the needs of teachers have been created in the M.B.S. program.

Within the program there are three options from which to choose: mathematics, applied science, and computer science. Students are required to complete a project or thesis that explores in depth some particular area of interest within their chosen option.

The length of time it takes to complete the degree is determined by the student's own schedule flexibility; many finish within two years. The program requires completion within five years or in six successful semesters during a wide range of times, and many M.B.S. students complete their curriculum by attending night classes throughout their program.

Requirements for Admission

A student must have had at least 40 semester hours in mathematics, computer science, physics, biology, chemistry, or geology in order to enter the program.

If the student's undergraduate grade-point average is 2.75 or less, the student may be required to take the Graduate Record Examination.

Application forms for admission to the M.B.S. program in The Graduate School may be requested from:

Master of Basic Science
University of Colorado at Denver
P.O. Box 173364, Campus Box 170
Denver, CO 80217-3364
Telephone: 556-3075

Requirements for the Master of Basic Science Degree

MATHEMATICS OPTION

1. The Course Work Requirements. All candidates choosing the Mathematics Option must complete approved upper division or graduate level electives in biology, chemistry, biology, physics, mathematics, or computer science to complete a 32-semester-hour degree plan.

a. A minimum of 15 semester hours of approved courses at the 3000 level or above in mathematics must be completed for the degree.

b. To assure breadth in the degree, the candidate must complete a
COMPUTER SCIENCE OPTION

1. **The Course Work Requirements.** All candidates choosing the Computer Science Option must complete approved upper division or graduate level electives in biology, chemistry, geology, physics, mathematics, or computer science to complete a 32-semester-hour degree plan. These courses may be approved selections from either the Department of Mathematics or the College of Engineering.

a. Either by previous training or by course work in the degree, candidates must demonstrate facility with a high level language such as Pascal or Ada that includes the ability to use arrays, records, dynamic structures (pointers), and recursion. A core of at least 15 semester hours of approved computer science courses is required.

b. To assure breadth in the degree, the candidate must complete a 6-semester-hour approved upper division or graduate level sequence in biology, physics, chemistry, or geology.

c. To assure depth in the degree, the candidate must complete 12 semester hours of approved graduate course work (i.e., numbered 5000 or above), 6 of which must be in computer science and another 6 from mathematics, computer science, biology, chemistry, geology, or physics.

d. The degree plan may include 3 semester hours of courses or seminars at the 3000 level or higher in secondary school mathematics teaching, history of mathematics or science, or philosophy of mathematics or science.

2. **The Required Project.**

All candidates for the Master of Basic Science who choose the Computer Science Option must complete a paper describing an approved research project or other study in the area of mathematics. In order to complete this project, each candidate must register for 2 semester hours of independent study under a faculty advisor no later than the last semester of enrollment for the degree.

3. **Oral Presentation.** No later than the last semester of enrollment for the degree, the candidate must make an oral presentation before the candidate’s Project Committee to present relevant information and answer questions regarding the completed project.

4. **Graduate Advisor and the Project Committee.** All candidates for the M.B.S. choosing the Mathematics Option must select a faculty advisor in the Department of Mathematics and two other faculty members to serve with the advisor as the candidate’s Project Committee. The names of these three individuals must be submitted to the M.B.S. Executive Committee no later than two semesters following full admission to the program.

APPLIED SCIENCE OPTION

1. **Course Work Requirements.** All candidates choosing the Applied Science Option must complete approved upper division or graduate level electives in biology, chemistry, geology, physics, mathematics, or computer science to complete a 32-semester-hour degree plan.

a. A minimum of 15 semester hours of approved courses at the 3000 level or above in science must be completed for the degree. These courses should include at least one in each of three areas from: biology, geology, chemistry, and physics.

b. To assure breadth in the degree, the candidate must complete two semesters of calculus or a 6-semester-hour approved upper division or graduate level sequence in mathematics or computer science.

c. To assure depth in the degree, the candidate must complete 12 semester hours of approved graduate course work (i.e., numbered 5000 or above), 6 of which must be in biology, chemistry, geology, or physics, and another 6 from mathematics, computer science, biology, chemistry, geology, or physics.

d. The degree plan may include 3 semester hours of courses or seminars at the 3000 level or higher in secondary school mathematics teaching, history of mathematics or science, or philosophy of mathematics or science.

2. **Required Project or Thesis.** All candidates for the M.B.S. who choose the Applied Science Option must complete a project or thesis. Teachers usually find the non-thesis option to their liking. Most other professionals will find that advancement is dependent upon a quality thesis; the thesis option is, therefore, recommended for them. Candidates must report their choice of the project or thesis option to the M.B.S. Executive Committee by the end of their second semester.

The thesis option requires 26-28 semester hours of course work plus 4-6 thesis credit hours, for a total of 32 semester hours.

The project option requires that the candidate complete a paper describing an approved research project that demonstrates the candidate’s ability to apply principles of applied science. In order to complete this project, each candidate must register for 2 semester hours of independent study under a faculty advisor no later than the last
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semester of enrollment for the degree. This is in addition to 30 semester hours of required course work, for a total of 32 semester hours.

3. Oral Presentation. Under the thesis or project option the candidate must make an oral presentation before a committee to present relevant information and answer questions regarding the completed project or thesis. This must be done no later than the last semester of enrollment for the degree.

4. Graduate Advisor and the Project/Thesis Committee. All candidates for the M.B.S. choosing the Applied Science Option must select a faculty advisor and two other faculty members to serve with the advisor as the candidate’s Project or Thesis Committee. The names of the three individuals must be submitted to the M.B.S. Executive Committee no later than two semesters following full admission to the program.

BIOLOGY

Chair: Alan P. Brockway
Office: NC 3409
Telephone: 556-8440

Faculty: Professors: Alan P. Brockway, Linda K. Dixon, Janis W. Driscoll, Emily L. Hartman, Georgia Lesh-Laurie

Associate Professors: Gerald J. Audesirk, Teresa E. Audesirk, Barbara Siems

Instructors: Mary Lou Rottman, David L. Shugarts, Barbara Siems

Adjuncts: Daniel D. Chiras, Douglas P. Reagan, Charles Preston

Emeritus Professors: Phyllis W. Schultz, George J. Siemens

Undergraduate

The study of biology introduces the student to the diversity of life, the chemical processes and adaptations shared by species and the interaction of species with their environment. By studying the differing fields of biology, the student begins to appreciate the characteristics of life and the remarkable evolutionary history leading to the present forms, and to understand the advances in biological technology that are transforming our society. Knowledge of the interrelationships between populations and their habitats leads to respect, concern, and a sense of responsibility for our environment.

The biology major prepares a student for graduate study in biology, for professional schools in the health careers, for a variety of biologically oriented jobs in government and industry, for teaching at various educational levels, or, as with any liberal arts major, for life itself. Students planning on a teaching career should consult with the School of Education for information on teacher certification.

Requirements for the Major. Biology majors must complete a minimum of 36 hours of biology, 16 hours of which are to be at the upper division level. Fifteen of the 36 hours are to be taken in residence with CU-Denver biology faculty. Included in the 36 hours are 20-21 hours of biology core courses, with a grade of C (2.0) or better, required of all majors. At least 4 other courses in biology beyond the core courses, with a grade of C (2.0) or better, are required to fulfill the rest of the hours. Included in these four courses must be a senior seminar taken during one of the student’s final two semesters. To complete a proper background for the study of biology, majors are required to take 34 hours of course work in ancillary disciplines. The following biology and ancillary courses are required:

<table>
<thead>
<tr>
<th>Biology Core Courses</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Biology I and II (BIOL 2051, 2061, 2071, 2081)</td>
<td>8</td>
</tr>
<tr>
<td>Principles of Ecology (BIOL 3411)</td>
<td>3</td>
</tr>
<tr>
<td>Cell Biology (BIOL 3611)</td>
<td>3</td>
</tr>
<tr>
<td>General Genetics (BIOL 3831)</td>
<td>3</td>
</tr>
</tbody>
</table>

One physiology or morphology course | 3-4 |
Total biology core | 20-21 |

Ancillary Core Courses

| General Chemistry, two semesters (CHEM 2031, 2038, 2061, 2068) | 10 |
| Organic Chemistry, two semesters (CHEM 3411, 3421) | 8 |
| College Algebra and Trigonometry (MATH 1110, 1120) | 6 |
| Physics (PHYS 2010, 2020, 2030, 2040) | 10 |

Total ancillary core | 34 |

Departmental Honors. Departmental honors will be awarded to students based on their grade-point average in classes taken from CU-Denver faculty. The following minimum grade-point averages must be met both for all courses taken at CU-Denver (overall GPA) and for biology courses alone (biology GPA): cum laude, 3.5; magna cum laude, 3.7; summa cum laude, 3.9.

Biology Research Scholars. The Biology faculty encourage students to pursue research as part of their undergraduate training. Students who excel in both course work and research will be recognized as CU-Denver Biology Research Scholars. To qualify as Biology Research Scholars, students must fulfill all of the following requirements: (1) achieve a minimum grade-point average of 3.5 in courses taken from CU-Denver faculty; (2) participate in a research project, consisting of a minimum of 6 credit hours of independent study, taken over at least 2 semesters; (3) write a paper describing the rationale, methodology, and results of their research; and (4) present a seminar based on their research. Students who wish to become involved in research should contact Dr. Gerald Audesirk, Chair of the Honors Committee, or a suitable faculty sponsor, no later than their junior year.

Requirements for the Minor. For a biology minor, students must complete all biology core courses with a minimum of 9 hours at CU-Denver and must have an average of C (2.0) or better in this course work.

Graduate

The master’s program in biology is designed to prepare graduates for research and teaching positions, employment in business and industry, advanced training as secondary school science teachers, and for advanced graduate work at the doctoral level. The M.A. in biology may be obtained with an emphasis in ecology, genetics, plant science, neurobiology, animal behavior, or cell biology.

Two principles have guided the development of the graduate program in biology. These are (1) the belief that a student’s program should be tailored to meet the student’s specific needs or personal goals and (2) the utilization of all the University’s resource facilities, regardless of the campus on which they are located, in order to provide greater opportunity and exposure for the student.

Requirements for Admission

Applicants must hold a baccalaureate degree from an accredited college or university earned with an overall grade-point average of 3.0 or better. (Exceptions to this grade-point average are made, dependent upon other qualifications and the letters of recommendation made on the student’s behalf.) Most applicants have an undergraduate major in biology or its equivalent. Students entering the Masters of Biology program must present the Biology core courses and a year of general chemistry with a minimum of C (2.0) or have tested out of these courses with a C (2.0). Students who do not meet the minimum requirements set by the department or the Graduate School may be admitted on a provisional basis as detailed in The Graduate School section in this catalog. The GRE is required of all applicants.
Applications are submitted directly to the biology graduate coordinator at CU-Denver.

DEGREE REQUIREMENTS
All course work taken within the department and applied toward the degree must be 5000 level or above. With the advisor's and/or committee's approval, course work at the 4000 level taken outside the department may be applied toward the degree. Two types of degree plans are offered:

Plan I (with thesis) requires 24 semester hours including 4-6 hours of thesis; at least 12 of the total semester hours must be 5000 level or above.

Plan II (without thesis) requires 30 semester hours of which 16 hours must be 5000 level or above.

There is no core of required courses structured into the master's degree program; however, one seminar (1 or 2 hours credit) or BIOL 5705, Introduction to Research, is required. A course plan is developed by the student and major professor and approved by the student's graduate committee.

ADDITIONAL INFORMATION
The student is referred to the biology graduate coordinator and to the Department of Biology's Master of Arts in Biology brochure which is available in The Graduate School office or the biology department. Specific questions relating to the student's background and specific program needs should be directed to the biology graduate coordinator.

Courses

BIOL 1042-3. Basic Biology for the Non-Majors I. Lecture. This one-semester survey course is designed to present basic information and concepts of biology as they relate to everyday life. The emphasis is on humans and their relationship to the world. This course will not count toward a major in biology.

BIOL 1043-3. Basic Biology for Non-Majors II. Continuation of BIOL 1042. A non-major course that covers cell structure and function, genetics, plant structure and function, and human systems. Lecture topics are related to present-day concerns, when appropriate. Prereq: BIOL 1042.

BIOL 1332-1. Topics in Biology. Five-week courses dealing with various topics in biology. See Schedule of Classes for current topics. For non-science majors to fulfill the natural science requirements.

BIOL 1342-3. Humans and Ecosystems. For non-biology majors, this course will introduce principles of ecology and explore human activities from an ecological perspective. Topics will include ecosystem structure and agriculture, human and nonhuman population dynamics, energy flow in ecosystems and human energy consumption, material cycling in ecosystems and pollution.

BIOL 1352-3. Biology of Cancer. This course, for non-majors, explores the biological nature of cancer, a disease that strikes one in three Americans. It offers an overview of what recent research has revealed about the causes of cancer, about how it can be treated and might be prevented. This overview is based on a foundation of knowledge gained from basic research into the behavior and activities of cells, both normal and cancerous. The emphasis is on the biology of cancer at the cellular and molecular level.

BIOL 1550-4. Basic Biology I. Fall. Lecture and lab. A non-major course which introduces students to important concepts of biology including: ecology, issues of environmental concern, survey of five kingdoms, and evolution. The presentation of lecture topics incorporates related current issues in the news today. Lab required. Course will fulfill the CU-Denver core requirement. Students will not receive credit for both BIOL 1550 and BIOL 2051/2071.

BIOL 1560-4. Basic Biology II. Spring. Lecture and lab. A non-major course which introduces students to cell structure and function, genetics, plant structure and function, and human systems. When applicable, lecture topics are related to present-day concerns and news events. Lab required. Course will fulfill the CU-Denver core requirement. Prereq: BIOL 1550. Students will not receive credit for both BIOL 1560 and BIOL 2061/2081.

BIOL 2051-3. General Biology I. Fall. Lecture. Introduction to five major areas of study: (1) the chemistry of biological systems; (2) the structure and function of the cell; (3) cellular energy transformations (photosynthesis and respiration); (4) genetics (mitosis, meiosis, patterns of inheritance, molecular genetics); (5) evolution. Biology and health science (premed, prevet, prephysical therapy, etc.) Majors must also take the accompanying laboratory - BIOL 2071.

BIOL 2061-3. General Biology II. Spring. Lecture. Continuation of BIOL 2051. Introduction to three major areas of study: (1) animal structure and function, (2) plant structure and function, and (3) ecology. Biology and health science (premed, vet, nursing, etc.). Majors must also take the accompanying laboratory - BIOL 2081.

BIOL 2071-1. General Biology Laboratory I. Laboratory exercises corresponding to topics in BIOL 2051. The study of plant and animal anatomy and microanatomy with some ecology field trips. Should be taken concurrently with BIOL 2051.

BIOL 2081-1. General Biology Laboratory II. Laboratory exercises corresponding to topics in BIOL 2061. The study of plant and animal anatomy and microanatomy with some ecology field trips. Should be taken concurrently with BIOL 2061.

BIOL 2254-3. The Biology of Social Behavior. An introduction to the biological bases of social behavior with an emphasis on evolution.

BIOL 3112-3. Biology of Women. Spring. A survey of women from a biological perspective, encompassing the anatomical, physiological, genetic, and behavioral aspects of women. This course cannot be used to fulfill biology major requirements.

BIOL 3122-3. Natural History of Colorado. Lecture. The ecosystems of the plains, mountains, and plateaus of Colorado including topography, climate, habitats, plants and animals are studied. Plant and animal adaptations to their environments are discussed. Glacial and geomorphic processes that have shaped the mountains are considered. Course is intended for non-majors. It cannot be used to fulfill biology major requirements.

BIOL 3134-1 to 8. Advanced Topics. Periodic examination of current topics in the field of biology.

BIOL 3135-3. The New Biology. A lecture/discussion class dealing with the biological basis for ethical and social issues which arise from technological advances in science. Emphasis will be on modern medical technologies and moral decisions which arise from them. Prereq: junior standing. Will not fulfill biology major requirements.

BIOL 3142-3. Role of Plants in Today's World. Lecture. This course includes an historical approach to the importance of plants in the development of civilizations, the use of plants in medicine, and the study of present-day environmental issues such as global warming, deforestation, acid rain, desertification, and the role of new crops in developing countries.

Course is intended for non-majors. It cannot be used to fulfill biology major requirements.

BIOL 3154-4. Plant Physiology. Lecture, laboratory. An in-depth study of the functions and activities of plants including water relations, photosynthesis, respiration, pheromones, growth essential
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mineral elements, photoperiodism, ver- nalization and cold tolerance, and seed dormancy and germination. Prereq: one year of general biology.

Biol 3225-4. Essentials of Human Physiology. Fall and Spring. Lecture, laboratory. The basic orientation of the course is toward understanding the functioning of the body as a set of homeostatic mechanisms. Particular emphasis is placed on membrane potentials, muscle, circulation, respiration, digestion, the kidney, the control of metabolism, and acid-based balance. Prereq: one year of general biology and one year of general chemistry.

Biol 3244-4. Human Anatomy. Fall and Spring. Lecture, laboratory. An introduction to the structural aspects of the human body. Anatomical models, microscope slides, and dissections, including rat dissections, will be used in the lab. Prereq: one year of general biology.

Biol 3253-4. Introduction to Animal Behavior. (PSY 3254.) Lecture. An introductory survey of the study of the behavior of nonhuman animals. An evolutionary perspective is used to examine the mechanisms of behavioral control in individuals and groups of animals and how animal species adapt to the environment. Prereq: one semester of psychology or biology.


Biol 3411-3. Principles of Ecology. Fall. A lecture course that deals with interrelations between organisms and their environments. Subject matter includes individual, population, and ecosystem levels of study and application to current environmental issues. The emphasis is on the underlying principles of ecology that involve all types of organisms. Prereq: one year of general biology.


Biol 3654-4. Microbiology. Fall. Lecture, laboratory. A survey of the distinguishing characteristics of microorganisms based on structural-functional relationships, taxonomy, growth, and physical chemical agents of control including antibiotics, metabolism, and genetics. Students will be introduced to applied microbiology with an emphasis on infectious diseases, basic concepts of immunology, and microbial ecology. Prereq: one year of general biology. Organic chemistry recommended.

Biol 3724-3. Developmental Psychology. (PSY 3724.) Exploration of the biological influences on the development of brain and behavior. Emphasis is on evolution and development, the role of experience in prenatal and postnatal development, the ontogeny of sensory systems, learning and memory, and the biological bases of language acquisition. Prereq: general biology or introduction to psychology.

Biol 3804-4. Developmental Biology. A survey of developing systems including insects, echinoderms, amphibia, birds, mammals, and selected plant type. Content will include gametogenesis, embryogenesis, and a survey of differentiating systems. Prereq: one year of general biology.


Biol 3838-2. Laboratory in General Genetics. Laboratory. To acquaint students with techniques used in the study of genetics. Independent projects and general laboratory exercises included. Prereq: Biol 3831.

Biol 3939-1 to 3. Internship/Cooperative Education. Designed experience involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: junior standing and 2.75 grade-point average.

Biol 4050-1 to 3. Advanced Biology Topics. Examination of current topics in the field of biology. Topics vary from term to term.

Biol 4064-3. Advanced Cell Biology. Lecture. This course builds on the foundations laid in the prerequisite courses. Major topics include the functions of cell membranes, energy transduction, and regulation of metabolic pathways. A major emphasis is the control and integration of cellular activities. Prereq: Biol 2611 and Chem 3411.


Biol 4394-2. Laboratory in Animal Behavior. (PSY 4394.) Laboratory projects and field observations of the behavior of animals. Prereq or coreq: PSY 2254 or Biol/PSY 4254.

UPPER DIVISION/GRADUATE LEVEL

Students enrolled at the 5000 level may expect additional work and evaluation commensurate with graduate standards.


Biol 4124/5124-3. Quantitative Genetics. Survey of the principles of genetics of quantitative traits. Topics include gene frequencies, effects of mutation, migration, and selection; correlations among relatives, heritability, inbreeding, crossbreeding, and selective breeding. Prereq: general biology and general genetics.


Biol 4154/5154-3. Environmental Ecology. Lecture. Topics in population biology that form a basis for understanding many environmental issues. Material covered includes population growth, demographic competition, biogeographic theory, and the genetics of small populations. These concepts are applied to issues such as over-population, the design of nature reserves, captive breeding, and genetic diversity. Prereq: Biol 3411 or an equivalent introductory ecology course.


Biol 4254/5254-3. Advanced Animal Behavior. Lecture. An advanced course emphasizing the behavioral similarities and differences among animals. Principles of behavior are discussed in a variety of species. Prereq: one year of general biology and upper division or graduate standing is required. Biol/PSY 3254 is recommended.
BIOL 4274/5274-3. Environmental Physiology. Lecture. A look at the physiological mechanisms used by animals and plants in adapting to changes in such natural environmental parameters as temperature, light, and water availability. The intent is to lay the groundwork for approaching the study of the effects of changing environments on organisms. Prereq: one year of chemistry and one course in either plant or animal physiology.

BIOL 4335/5335-4. Plant Science. In-depth study of the angiosperms (flowering plants), including embryology, structure, function, reproduction, ecology, and evolution of the group. Emphasis is placed upon morphology and anatomy of all stages of plant development. Lecture, lab, and some field trips. Prereq: one year of general biology.

BIOL 4404/5404-4. The Plant Kingdom. Lecture and laboratory. Evolution in the plant kingdom will be traced by the study of the structure, function, and ecology of each major plant group—algae through gymnosperms. Angiosperms (flowering plants) are covered in plant science. Local Colorado examples will be emphasized in the lab and field.

BIOL 4414/5414-4. Mountain Ecology. In-depth study of mountain plant communities: structure, characteristics, dynamic processes, and interactions with environmental factors. Communities are oriented into major mountain ecosystems according to Marr. Formation of the Rocky Mountains and glaciation are covered. Some discussion of aetiological factors and their influence on plant communities is included. Field and lab studies emphasize techniques in vegetation analysis, descriptive statistics, and current survey of literature is required. Lecture, lab, field trips during class time. Prereq: one year of general biology. BIOL 5414 not open to students who have had BIOL 4414.

BIOL 4425/5425-3. Ecology and Taxonomy of Grassland Plants. Lecture, laboratory, class-time field trips. A study of the Colorado grasslands from plains to alpine tundra stressing ecology of the various units, species composition, representative adaptations, habitat variation, and past disturbances. Students will learn to identify the major grassland plants including grasses, sedges, rushes, and composites. Prereq: one year of general biology and an ecology course or consent of instructor.

BIOL 4474/5474-4. Ecological Methods. Lecture and laboratory. This course deals with the empirical aspects of an ecological study. Students will learn sampling techniques that are used in plant and animal ecology. Emphasis is placed on hypothesis testing, data analysis, and experimental field designs. Prereq: BIOL 3411. BIOL 5474 not open to students who have had BIOL 4474.

BIOL 4500/5500-3. Microcomputers in Biology. Lecture and laboratory. An overview of the various uses of microcomputers in biology including word processing, data bases, data analysis (including statistical analysis), spreadsheets, simulations, and instructional uses. Includes an introduction to Prolog and BASIC programming. There will be both lecture/discussions and individual exercises on a microcomputer.

BIOL 4615/5615-3. Vertebrate Embryology. Introduction to fundamental developmental anatomy including gametogenesis, fertilization, gastrulation, and early organogenesis. The comparative developmental anatomy of the echinoderm, amphibians, birds, and mammals, including the human, is examined. BIOL 5615 not open to students who have had BIOL 4615.

BIOL 4674/5674-3. Mammalian Endocrinology. This systematic survey of the endocrine system looks at the cellular basis and biochemical characteristics of individual endocrine tissues. Their function in the regulation of other endocrinological, physiological, and behavioral events is analyzed. The course emphasizes the human system and complements studies in physiology, behavior, and neurobiology. BIOL 5674 not open to students who have had BIOL 4674. Prereq: BIOL 3225.

BIOL 4704/5704-4. Biometry. Lecture and lab. An intensive course in intermediate statistics with emphasis on experimental design and data analysis. Includes statistical design of repeated measures, analysis of variance, correlation, regression, and nonparametric tests. Prereq: one year of general biology, statistics, and two other biology courses.

BIOL 4705/5705-2. Introduction to Research. This course is an overview of all aspects of scientific research. Topics covered include the scientific method, experimental design, the role of statistics, scientific writing, publication, and sources of funding. Several guest faculty lectures are scheduled. Prereq: at least one year of natural or physical science and upper division standing.

BIOL 4974/5974-3. Evolution. A capstone course that draws upon concepts from all fields of biology. Lecture topics include the fossil record, mass extinctions, the historical development of the modern synthesis, principles and mechanisms of evolution, and current viewpoints and controversies. This challenging course is recommended only for advanced undergraduates. Prereq: one year of biology and upper division standing.

GRADUATE LEVEL

BIOL 5050-1 to 8. Advanced Biology Topics. This course is reserved to offer formal courses for which seniors as well as graduate students may enroll without resorting to independent study.

BIOL 5315-3. Field Biology. A study of the native Colorado mountain and plains vascular flora. Student learns identification procedure using frozen fresh plant specimens. The principles of taxonomy, nomenclature, systems of classification, evolution, and field and herbarium procedures are covered. Lecture, lab, some class-time field trips. Prereq: one year of general biology.

BIOL 5939-1 to 6. Cooperative Education. Designed experience involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: graduate standing.


INDEPENDENT STUDY.

BIOL 4840-1 to 6. Independent Study. (Undergraduate). Prereq: written consent of instructor.

BIOL 6840-1 to 6. Independent Study. (Graduate). Prereq: written consent of instructor.

CHEMISTRY

Chair: Douglas Dyckes
Office: NC 3205
Telephone: 556-4885
Faculty: Professor: Robert Damrauer, Douglas Dyckes
Associate Professors: Larry G. Anderson, John A. Lanning, Robert R. Meglen
Assistant Professors: Corinne H. Campbell, Doris Kimbrough, Donald Zaplen
Special Visiting Professor: Joel Selbin

Undergraduate

Why study chemistry? A practical reason is that our highly technical society
faces many problems which can be solved through an understanding of the science of chemistry and its methods of solving problems. A more intangible reason is that chemistry is central to a variety of other disciplines and that many problems ultimately may have chemical solutions.

At the undergraduate level students can prepare for (1) careers in chemical and medical laboratories; (2) careers in nursing, medical technology, dental hygiene, and other health-oriented fields; (3) post-baccalaureate programs in chemistry, biology, biochemistry, medicine, physical therapy, and dentistry. At the graduate level, an M.S. degree program is offered. Students with M.S. degrees have job opportunities in research and technical laboratory services. In addition, flexible programs can be designed to combine chemical knowledge and skills with other interests of the M.S.-level student (e.g., biology, environmental science, or geology).

Requirements for the Major. For graduation at the bachelor’s level, students majoring in chemistry must present a minimum of 39 credits in the following courses or their equivalents: CHEM 2031, 2038, 2061, 2068, 3111, 3118, 3411, 3418, 3421, 3498, 4121, 4128, 4511, 4521, 4528; PHYS 2311, 2321, 2331, 2341; MATH 1401, 2411, 2421. At least 14 hours of the required upper division chemistry course work (including CHEM 4128 or 4528) must be taken at CU-Denver. Students interested in the chemistry major should consult regularly with a member of the chemistry faculty. A complete description of the chemistry major’s program may be obtained in the Department of Chemistry office.

Qualified majors are strongly urged to participate in the integrated laboratory, independent study or departmental honors programs.

Students planning chemistry as a career should be familiar with the recommendations of the American Chemical Society (ACS) for the professional training of chemists. Among these recommendations are two semesters of inorganic chemistry (CHEM 3010 and 4010) and one additional semester of advanced work (see graduate chemistry offerings and 4000-level biochemistry courses). Three hours of independent study will satisfy the advanced course requirement. These additional courses lead to a bachelor’s degree certified by the American Chemical Society. CU-Denver maintains an ACS chapter of student affiliates.

Departmental Honors. Students wishing to graduate with departmental honors in chemistry should plan to do a minimum of two semesters (6 credit hours) of research (CHEM 4840 or CHEM 4558 and CHEM 4568), ordinarily starting in the junior year. A detailed description of the Honors Program in chemistry is available in the Department of Chemistry office.

Integrated Laboratory Research Experience. Select students may satisfy all of their upper-division laboratory requirements (CHEM 3111, 3418, 3498, 4128, and 4528) by completing the Honors Laboratory sequence: CHEM 3158, 3168, 3458, 3468, 4558, and 4568. These courses constitute an integrated sequence designed to introduce students to the major areas and methods of laboratory research and to enable them to complete a research thesis. All students who complete this sequence will receive certification as Chemistry Department Research Scholars. Students whose theses are judged outstanding, and who qualify under other criteria (see the Honors Program description) will be awarded Departmental Honors.

Chemistry Minor. The objective of the chemistry minor is to provide broad introductory course work and laboratory experience to science majors without the more technical mathematical and chemical prerequisites required of the chemistry major. The chemistry minor is open to all students and should prove beneficial for science majors, pre-professional health science majors, and students seeking science education certification.

There are course work and grade requirements that must be satisfied to obtain a chemistry minor. Students must take a minimum of 20 semester hours of chemistry courses with a minimum of 10 upper division chemistry hours. Upper division course work must include three of the five disciplines that comprise chemistry: analytical, bio-, inorganic, organic, and physical. All chemistry minor courses must be taken for a letter grade rather than on the pass/fail grading option. A minimum 2.0 GPA in the chemistry minor courses must be earned. To satisfy the department residency requirement, a minimum of 7 upper division hours of chemistry must be taken at CU-Denver. A complete description of the chemistry minor may be obtained in the department office.

Graduate

The M.S. degree is offered at CU-Denver in the following basic fields: analytical, biochemistry, inorganic, organic, or physical chemistry. Additionally, research programs involving environmental and geochemical problems are being offered.

The M.S. program is available to both full-and part-time students. The chemistry faculty at CU-Denver strive to ensure that students receive excellent advising and supervision of work. Students enrolled in the program have an opportunity to be appointed as laboratory teaching assistants. Research activities on the part of the chemistry faculty provide opportunities for graduate students to obtain research assistantships.

Requirements for Admission

Students must meet The Graduate School admission requirements. International students may have additional admission requirements concerning immigration status, proof of financial responsibility, and acceptable TOEFL scores. An undergraduate major in chemistry, including two semesters of physical chemistry, is desirable as all entering students are required to take qualifying examinations covering the major fields of chemistry. The GRE examination is suggested as is the advanced chemistry GRE examination. Failure to meet the full admission standards may lead to provisional admission.

Degree Requirements

There are two master’s degree plans offered from the Department of Chemistry: Plan I is a research-oriented plan requiring 17 to 22 credit hours of formal course work, 4 to 9 credit hours in research courses, for a total of 26 credit hours, and the successful oral presentation of a written thesis covering the research project. Plan II is a course work-oriented plan without a thesis requiring 32 credit hours of formal course work, 3 credit hours in research courses, and the successful oral presentation of a written report covering a research project.

Examinations. Qualifying preliminary examinations are given to all entering students in basic fields of chemistry. After completion of the student’s research project, a final oral examination is given to cover the thesis (Plan I) or research report (Plan II).

Prospective students are encouraged to contact the graduate advisor for additional details concerning the chemistry program, admission procedures, financial assistance, and faculty research interests.
Courses

CHEM 1000-3. Foundations for General Chemistry. Spring and Summer. Lecture. For students with no previous chemistry or with inadequate background. This course prepares for CHEM 2031 or 1130. Prereq: MATH 1110 or high school equivalent.

CHEM 1012-5. Introduction to General Chemistry. Fall. Lecture, recitation and laboratory. A beginning course intended to meet the requirements for prenursing, physical education, physical therapy, child health associates, minerals land management, and other students wanting to fulfill curriculum or area distribution requirements. No previous knowledge of chemistry is required. Prereq: MATH 1110 or high school equivalent.

CHEM 1020-5. Introduction to General Chemistry II: Introduction to Organic Chemistry, Biochemistry, and Biochemical Technology. Spring. Lecture, recitation and laboratory. Continuation of CHEM 1012 with introduction to organic chemistry, biochemistry, and biochemical technology. Meets the needs of prenursing, physical education, child health associates, and other students. Prereq: CHEM 1012 or permission of instructor.

CHEM 1130-5. Engineering General Chemistry. Fall and Spring. A one semester non-laboratory version of general chemistry for engineers and those science majors who do not require laboratory credit and do not plan to take a second semester of chemistry. Prereq: one year of high school chemistry, or CHEM 1000 or 1012, and MATH 1110 or high school equivalent.

CHEM 1332-1. Topics in Chemistry. Five-week modules dealing with topics in chemistry. See current Schedule of Classes. Designed for non-science majors to fulfill the natural science requirement.

CHEM 1450-4. Real World Chemistry I. This is a core course offering designed to introduce the novice to the fascination of chemistry and to its methods. Emphasis on understanding patterns in chemistry, on dealing with social issues caused by chemical developments, and on its historical developments will form the foundation for the course.

CHEM 1460-4. Real World Chemistry II. A continuation of CHEM 1450. A core course offering designed to introduce the novice to the fascination of chemistry and to its methods. Emphasis on understanding patterns in chemistry, on dealing with social issues caused by chemical developments, and on historical developments will form the foundation for this course. Particular emphasis will be placed on organic chemistry, biochemistry and biochemical technology. Prereq: CHEM 1450 or permission of instructor.

CHEM 2031-4. General Chemistry I. Fall, Spring. Lecture. A beginning course for science majors, medical technologists, premedical, and predental students. Topics include chemical structure, atomic and molecular properties, and thermodynamics. Prepares students to take upper division chemistry courses. CHEM 2038 laboratory to be taken currently. Prereq: one year of high school chemistry, or CHEM 1000 and 1012 and MATH 1110 or high school equivalent.

CHEM 2038-1. General Chemistry Laboratory I. Fall, Spring. Laboratory to accompany CHEM 2031. Students perform laboratory experiments on topics covered in CHEM 2031 and gain experience in observing, recording, and interpreting physical and chemical phenomena. Coreq: CHEM 2031.

CHEM 2065-3. General Chemistry II. Spring. Summer. Continuation of CHEM 2031. Topics include kinetics, equilibria, and thermodynamics. CHEM 2068 laboratory to be taken concurrently. Prereq: CHEM 2031.

CHEM 2068-1. General Chemistry Laboratory II. Spring, Summer. Laboratory to accompany CHEM 2061 and a continuation of CHEM 2038. Students gain experience with laboratory technique and elementary chemical instrumentation. Prereq: CHEM 2038. Coreq: CHEM 2061.

CHEM 2300-3. Nutritional Chemistry. Lecture. A chemistry-based introductory course in nutrition intended primarily for majors in nursing, physical therapy, physical education, etc. Topics include structure and metabolism of carbohydrates, lipids, and proteins; functions of vitamins and minerals; and controversial nutritional topics and food constituents. Prereq: CHEM 1020 or equivalent.

CHEM 3010-3. Applications of Modern Inorganic Chemistry. Fall. An application of the principles learned in general chemistry. The course surveys the chemistry of the elements with an emphasis on periodic properties and applications to everyday problems. Prereq: CHEM 2061.

CHEM 3111-3. Analytical Chemistry. Spring. A lecture course designed to introduce the student to the study of structure, reaction, properties, and mechanisms of organic molecules. CHEM 3418 laboratory to be taken concurrently. Prereq: CHEM 2061.

CHEM 3148-1. Organic Chemistry Laboratory I. Fall, Spring. A laboratory course designed as an introduction to the study of structure, reaction, properties, and mechanisms of organic molecules. CHEM 3418 laboratory to be taken concurrently. Prereq: CHEM 2061.

CHEM 3421-4. Organic Chemistry II. Spring. Summer. A continuation of CHEM 3411. A lecture course designed as an introduction to the study of structure, reaction, properties and mechanisms of organic molecules. CHEM 3428 laboratory or CHEM 3498 laboratory to be taken concurrently. Prereq: CHEM 3411.

CHEM 3428-1. Organic Chemistry Laboratory II. Spring, Summer. A laboratory course to be taken concurrently with CHEM 3421 illustrating the practical aspects of organic chemistry. Prereq: CHEM 2068; coreq: CHEM 3411.

CHEM 3455-3. Introduction to Honors Research: Synthesis and Mechanism I. Independent research with an emphasis on the techniques of chemical measurement and analysis in the areas of analytical, physical or instrumental chemistry or chemometrics. One hour of seminar and 6-8 hours of laboratory per week. Students may not register for CHEM 3458 during the same semester. Prereq: CHEM 2061 & 2068. Prereq or coreq: CHEM 3411.

CHEM 3458-2. Introduction to Honors Research: Measurement and Analysis II. Independent research with an emphasis on the techniques of chemical measurement and analysis in the areas of analytical, physical or instrumental chemistry or chemometrics. One hour of seminar and 6-8 hours of laboratory per week. Students may not register for CHEM 3458 during the same semester. Prereq: CHEM 2061 & 2068. Prereq or coreq: CHEM 3411.
CHEM 3468-2. Introduction to Honors Research: Synthesis and Mechanism I. Independent research with an emphasis on the synthetic and/or mechanistic aspects of organic, inorganic, organometallic or biological chemistry. One hour of seminar and 6-8 hours of laboratory per week. Students may not register for CHEM 3168 during the same semester. Upon successful completion, CHEM 3468 may be substituted for CHEM 3428 in the major's requirements. Prereq: CHEM 2061 & 2068. Prereq or coreq: CHEM 3411.

CHEM 3469-2. Honors Organic Chemistry Laboratory II. Spring. A laboratory course open to all students in CHEM 3421 and required of chemistry majors. In small groups, students will use the chemical literature to devise multistep syntheses or isolate and identify organic compounds in natural products. Prereq: CHEM 3418; coreq: CHEM 3421.

CHEM 3510-4. Physical Chemistry: Biological Applications. Fall. An introduction to physical chemistry that examines the principles of thermodynamics, equilibrium solutions, and kinetics as they apply to biological systems. Calculus required to learn the principles is presented in the course. Prereq: CHEM 2061, MATH 1120, and PHYS 2020.


CHEM 3510-1 to 3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: Fall, Spring. Junior standing and 2.75 grade-point average.

CHEM 4010/5010-3. Modern Inorganic Chemistry. Fall, Spring. Introduction to bonding and symmetry and the reactions of selected main group or transition metal compounds. Prereq: CHEM 4521 or consent of instructor, also graduate standing for CHEM 5010.


CHEM 4128-2. Instrumental Analysis Laboratory. Fall. Laboratory practice to accompany CHEM 4121. Emphasis placed on writing scientific reports. Required of chemistry majors and open to other students in CHEM 4121. Coreq: CHEM 4121.


CHEM 4521. Physical Chemistry II. Spring. Continuation of CHEM 4511, with emphasis on chemical kinetics, quantum mechanics, molecular structure, and spectroscopy. Prereq: CHEM 4511.

CHEM 4528-3. Physical Chemistry Laboratory. Spring. Instruction in the experimental techniques of modern physical chemistry with emphasis on the fundamental principles of thermodynamics, quantum chemistry, statistical mechanics, and chemical kinetics. For chemistry majors. Coreq: CHEM 4521.

CHEM 4558-2 to 3. Senior Honors Research I. Independent research in chemistry. Eight or more hours of laboratory and one hour of senior honors seminar per week. Students will be required to present a formal honors proposal and literature seminar. Prereq: CHEM 3158, 3168, 3458, 3468, 4121 & 4521.

CHEM 4568-2 to 6. Senior Honors Research II. Independent research in chemistry. A minimum of eight hours of laboratory and one hour of senior honors seminar per week. Students will be required to write and present a formal honors thesis and to defend it in a departmental seminar. Prereq: CHEM 4558.

CHEM 4810-3. General Biochemistry I. Fall. Topics include structure, conformation, and properties of proteins; enzymes; mechanisms and kinetics; intermediate metabolism; carbohydrates, lipids; energetics and metabolic control; and an introduction to electron transport and photosynthesis. Prereq: CHEM 3421 and BIOL 2061.

CHEM 4820-3. General Biochemistry II. Spring. Continuation of CHEM 4810. Topics include macromolecules; metabolism of nucleic acids and nitrogen-containing compounds; biosynthesis and function of macromolecules including DNA, RNA, and proteins; biochemistry of subcellular systems; and special topics. Prereq: CHEM 4810.

GRADUATE LEVEL

CHEM 5110-3. Advanced Analytical Chemistry. Advanced analytical theories and practices in electrochemistry and separation techniques. Prereq: one year of analytical chemistry.

CHEM 5120-3. Selected Topics in Spectroscopy and Automation. Topics vary from year to year with emphasis on automation using small computers, spectroscopy, and recent analytical developments. Prereq: one year of analytical chemistry.

CHEM 5140-3. Chemical Separations. A survey of the principles, methodology, and applications of analytical separations techniques to problems in the biological, environmental, and chemical sciences. Prereq: CHEM 4121.


CHEM 5250-3. Chemometrics: Data Analysis. This course is designed to provide chemists and environmental scientists with the basic statistical skills for effective data analysis and experimental design. Minimal theoretical detail is provided, practical applications and graphical techniques will be emphasized.

CHEM 5310-3. Advanced Organic Chemistry I. Survey of types of chemical bonds, resonance, hydrogen bonding, free radicals, and reactions and preparations of some of the more important types of organic compounds. Prereq: CHEM 3421 and 4511.


CHEM 5600-3. Topics in Chemistry. Topics vary from year to year. Prereq: graduate standing or consent of instructor.

CHEM 5710-3. Air Pollution Chemistry. A discussion of air pollution problems including stratospheric pollution, global chemical cycles, air quality standards, urban pollution, acid deposition, and visibility problems. Prereq: CHEM 4521.

CHEM 5810-3. General Biochemistry I. Fall. An introduction to biochemistry for graduate students who may or may not have had a previous course in biochemistry. Topics are similar to CHEM 4810, but emphasis is placed on the primary and review literature as source material and on the interpretation of important experiments in biochemistry. Prereq: CHEM 3421, BIOL 2061, and graduate standing.

CHEM 5820-3. General Biochemistry II. Spring. A continuation of CHEM 5810. Topics are similar to CHEM 4820, but emphasis is similar to that detailed for CHEM 5810.

CHEM 5939-1 to 6. Cooperative Education. Prereq: CHEM 6000-1. Chemistry Seminar. Faculty and student presentations of CU-Denver research projects and other current chemistry topics. All chemistry students are encouraged to attend, but credit is given only to students who present seminars. Prereq: graduate standing or consent of instructor.


INDEPENDENT STUDY.

CHEM 4840-1 to 6. Independent Study. (Undergraduate), Consent of instructor required. Consent of instructor required. CHEM 6840-1 to 6. Independent Study. (Graduate).

COMMUNICATION

Associate Chair: Robley Rhine
Office: AR 274B
Telephone: 556-2591
Faculty: Professor: Robley D. Rhine
Associate Professors: Samuel A. Betty, (graduate advisor) Jon A. Winterton
Assistant Professor: Michael Monsour
Instructor: Gail Campbell

An undergraduate wishing to major in Communication must apply to the department to be accepted as a major. The student should meet the following criteria before applying: (1) have achieved sophomore status (30 hours or more); (2) have taken CMMU 1011, CMMU 1021, CMMU 2031, and CMMU 2041. The student should have a 2.99 GPA in the above courses. The student should obtain an application form from the department, complete the form, return it with a letter explaining why the applicant wishes to major in Communication and how the applicant plans to use the major. Meeting the foregoing requirements does not guarantee acceptance as a major. The department reserves the right to choose the best students to fill the spaces available.

The student accepted as a major should contact the department for the requirements for the completion of the major. The student should consult periodically with a departmental advisor as to the choice of schedule and electives that will be best suited to the student's needs, skills, and goals.

Communication Emphasis

UNDERGRADUATE

Communication majors take employment in a broad range of jobs. Most majors find employment in the communication related industries—the print, radio, telecommunications, and video media—in the public relations and public information sector of the economy—or in first-line management.

The objective of this series of courses is to equip the student with a wide range of theoretical perspectives and diverse communication skills. The theoretical perspectives generally focus on face-to-face communication in interpersonal, small group, institutional, and community settings. The skills component of the emphasis seeks to equip students with flexibility in their choice of communication strategies so that they may react effectively to various situations.

The program offers two types of courses to the student: (1) theory-oriented courses which examine the rich empirical and critical literature in communication studies; and (2) performance-oriented courses designed to promote the students' confidence in their abilities to communicate effectively in many contexts.

The communication emphasis requires that students take a total of 46 hours of course work (usually 15 courses) in communication and theatre. Thirteen courses (40 hours) are required. Two courses (6 hours) are chosen from a list of specified alternatives. Fifty percent of the courses for the major must be taken from CU-Denver faculty.

Students with this major are particularly encouraged to enroll in internships made available through the Center for Internships and Cooperative Education. In the past, students in this program have worked with the metropolitan area's major television and radio stations, with many general distribution and specialty publications, and with corporate and governmental offices of public information.

MINOR

Students also may minor in communication by taking 18 hours of courses from the communication curriculum. A list of courses for the communication minor may be obtained from the department office.

GRADUATE

Applicants are admitted to the graduate program in communication on the basis of their academic records, recommendations, and the GRE scores. A GPA of 3.0 is normally expected. Students admitted who are unable to offer a substantial number of semester hours of work in the area of their intended specialization or in allied fields must expect that a significant number of additional courses and semester hours will be required of them in order to make up deficiencies.

The graduate communication degree is an integrated program between the Denver and Colorado Springs campuses. Graduate students may take courses and do research with faculty on both campuses.

Degree Requirements

For every student who declares intention to qualify for an advanced degree, an advisor and committee will be selected. It is the duty of this advisor and committee to assume the responsibility for approving the student's graduate program, thesis, and comprehensive final examination.

All M.A. degree candidates are required to complete CMMU 6013 or its equivalent and at least one other course in communication at the 6000 or 7000 level. At least two courses (6 to 9 hours) must be taken outside the department; these courses should be chosen in consultation with the major advisor.

Plan I Option, With Thesis. After any undergraduate deficiencies have been removed, students under Plan I must normally earn 27 semester hours of which a minimum of 16 must be earned in communication. Students planning to pursue doctoral or professional communication degrees should expect to follow Plan I. At least two courses (6 to 9 hours) must be taken outside the department; these courses should be chosen in consultation with the major advisor.

Plan II Option, Without Thesis. After any undergraduate deficiencies have been removed, students under Plan II must normally earn 36 semester hours of which a minimum of 30 must be earned in one
Courses

CMMU 1011-3. Fundamentals of Communication. Fall, Spring, Summer. A lecture-discussion-recitation approach to communication theory and its application. Specific topics such as communication models, interpersonal communication and the concept of self, nonverbal communication, message preparation and analysis, problem solving and decision making.

CMMU 1021-3. Fundamentals of Mass Communication. Study of the relationship between television, radio, newspapers, magazines and society. Course examines the effects of exposure to mass media, mass media ownership and control, mass media law, and technical aspects of message and program making and delivery.

CMMU 2031-3. Communication Theory. Development of the theory of communication. Specific topics such as argumentation, source credibility, attitude, organization, language style, and mass communication will be expanded by both theoretical refinement and analysis of specific research studies.

CMMU 2041-3. Interpersonal Communication. Fall, Spring. A lecture-recitation course focusing on the theory and development of interpersonal relationships. Issues covered include the communication process, self versus others, self esteem, person perception, the attraction process, nonverbal communication, relationship development, and family communication.

CMMU 2050-3. Business and Professional Speaking. Improvement of oral presentations usually made by business and professional speakers. Emphasis on enjoyment and effectiveness in presenting briefing, attempts, motivating the audience, persuading people to act in accordance with the speaker's goals, and interviewing. (No credit given if the student has taken CMMU 2101.)


CMMU 3011-4. Research Methods. Fall. This course examines techniques used by researchers in communication. Communication studies have used a wide diversity of approaches. These include laboratory research, field and survey research, and special techniques such as content analysis and interaction analysis. The objective of the course is to give students enough background to read critically in the social sciences.

CMMU 3151-3. Group Dynamics. Fall, Spring. Analysis of the impact of small groups on individual behavior in social and task settings. Lecture, discussion, and guided experiences focus on the dynamics of small groups, including leadership, communication, roles, norms, goals, cohesion, etc.

CMMU 3271-3. Communication and Diversity. Explorations of the complexities of communication among current American diverse macro/micro groups - ethnic, racial, gender, etc. The course attempts to seek solutions via: sharing meaning, discovering common ground, adapting messages, accepting and working change, etc.


CMMU 3610-3. Radio Programming and Production. Introduction to basic elements of radio including the audio console, microphone, turntables, tape recorders, tape editing, timing, and combo operation. Emphasis on applying the basic principles and practices through professional production of live and taped radio programs. Prereq: CMMU 3600.

CMMU 3620-3. Television Production. Introduction to basic television production principles, practices, techniques, facilities, and equipment, including cameras, audio equipment, lighting, films, videotape, graphics, sets, etc. Prereq: CMMU 3600.

CMMU 3640-3. Introduction to Public Relations. Introduction to the following topics: principles, concepts, goals, effects upon society, public opinion, target audiences, adaptation to the media, uses, laws, and ethics. Prereq: CMMU 2101.

CMMU 3710-3. The Film Idea. A seminar and practicum in basic public service announcement and film production. Emphasizes the opportunities in the media to get film ideas aired on TV and radio. The class will produce public service announcements and one short film in cooperation with KCNC and KUSA. Prereq: junior or senior standing.

CMMU 3939-1 to 3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: junior standing and 2.75 grade-point average.

CMMU 3990-3. Problems in Communication. Course identifies and discusses various topics and problems in communication.

CMMU 4041-3. Theories and Methods in Interpersonal Communication. Examination of theories and methods used in interpersonal communication, and the role of communication in the development, maintenance, and deterioration of personal relationships. Attention is also given to major types of personal relationships, such as marriage and friendship, and how communication reflects and determines the dynamics of those relationships. Some topics covered include, but are not limited to, interpersonal attraction, self-disclosure, and decision making. Prereq: CMMU 2041, or special permission from the instructor.

CMMU 4150-3. Group Communication Theory. Observation and analysis of group processes and leadership roles and functions from the viewpoint of modern communication theory. Emphasizes both humanistic and human growth oriented theories of group communication and strict empiricist interpretations of group process. Prereq: CMMU 3151 or consent of instructor.

CMMU 4160-3. Representative American Speeches. Study of American speeches and speakers as they interact with audiences and events. Rhetorical analysis of ideas, organization, supporting materials, motivation, style, and delivery.

CMMU 4220-3. Information Analysis. Analysis of complex systems such as organizations, with theoretic and applied information exchange and decision-making tools. Study of the applications of the mathematical theory of communication. Prereq: consent of instructor.

CMMU 4250-3. Conflict Negotiation. A study of negotiation in interpersonal, small group, and organizational contexts. Special emphasis is placed on the role played by communication in the negotiation process. Involves examination of selected research studies and a major paper. Advanced level registration.

CMMU 4710-3. Topics in Communication. Special classes for faculty-directed experiences examining communication issues and problems not generally covered in the curriculum. Past topics classes have examined communication and technology, mediation and negotiation, communication in the courtroom and other topics.

CMMU 4910-3. Field Problems in Communication.

CMMU 4990-2. Problems in Communication. Course identifies and discusses various topics and problems in communication.

UPPER DIVISION/GRADUATE LEVEL

Students enrolled at the 5000 level may expect additional work and evaluation commensurate with graduate students.

CMMU 4111/5110-3. Theories of Leadership. A course examining the thought, research and applications related to the major theories of leadership. Emphasizes a critical reading of research confirming or denying various theories, and stresses the historical development of mid-range theories of leadership behavior and characteristics. Prereq: CMMU 1011 or 3151 or consent of instructor.


CMMU 4201/5200-3. Persuasion. Fall. Examination of influence and communication at individual, group, organizational, and societal levels. A theoretic and applied analysis of persuasion includes examination of public opinion, individual attitudes, beliefs, values, credibility, and certain message and audience variables. Attention is directed to the ethics and effects of persuasive appeals. Prereq: CMMU 1011.


CMMU 4230/5230-3. Nonverbal Communication. Spring. Study of nonverbal behaviors that accompany verbal communication or replace it: macropore, proxemics, kinesics, facial expression, eye contact, gestures, vocal characteristics, touch, personal adornment. Specific attention to deception and interviewing. Current theory, research and application.

CMMU 4240/5240-3. Organizational Communication. Relationships between such communication factors as flow, media, density, channel, saturation, information delivery and organization functioning, morale, and productivity. Lecture, theory, case observation, and analysis.

CMMU 4260/5260-3. Communication of Conflict: Interpersonal and Intergroup. A study of the influence of communication on interpersonal, interpersonal, intragroup, and intergroup conflict situations. Advanced level registration. Involves examination of selected research studies and a major paper.

CMMU 4270/5270-3. Intercultural Communication. Fall. An examination of the philosophy, process, problems, and potentials unique to communication across cultural boundaries. Implications for personal and social innovation. Comparative study of communication behaviors in selected cultures.

CMMU 4280/5280-3. Communication of Directed Change. Examination of the communication process underlying the diffusion of innovations. The course provides a bridge between theory and application in the study of directed change.

CMMU 4650/5650-3 to 4. Television in Education. Utilization of television at all levels of education. Theory and practice in defining needs, identifying alternative solutions, producing materials, and evaluating results. Fourth credit hour requires comprehensive project design. Prereq: CMMU 3600 or consent of instructor.

GRADUATE LEVEL

CMMU 5041-3. Theories and Methods in Interpersonal Communication. Examination of theories and methods used in interpersonal communication, and the role of communication in the development, maintenance, and deterioration of personal relationships. Attention is given to major types of personal relationships, such as marriage and friendship, and how communication reflects and determines the dynamics of those relationships. Some topics covered include, but are not limited to, interpersonal attraction, self-disclosure, and decision making. Prereq: CMMU 2041, or special permission from the instructor.

CMMU 5190-1 to 8. Problems in Communication. Opportunity for students to explore, upon consultation with the instructor, areas in communication which the normal sequence of offerings will not allow. Prereq: consent of instructor.

CMMU 5390-1 to 8. Problems in Communication Education. Opportunity for students to explore, upon consultation with the instructor, areas in communication and theater education. Prereq: consent of instructor.

CMMU 5600-2. International Patterns of Broadcasting. Comparison of the philosophies, practices, and organizational structures of broadcasting throughout the world. Prereq: consent of instructor.

CMMU 5690-2. 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. Prereq: consent of instructor.


CMMU 5990-3. Problems in Communication. Course identifies and discusses various topics and problems in communication.

CMMU 6013-3. Introduction to Graduate Work in Communication. Intended to familiarize students with the philosophical, ideological, and methodological bases of study in communication. Required of all departmental graduate students.

CMMU 6020-3. Critical Research Methods. Fall, Spring. To define and explore a variety of approaches to criticism, to explore their suitability for particular research problems, and to study problems in doing critical research.


CMMU 6040-3. Departmental Research Seminar. Devoted to the study, analysis, and actual instrumentation and experimentation in contemporary, ongoing research projects undertaken by various faculty members. Students will actually participate in hypothesis formation, testing and interpretation.

CMMU 6060-3. Management Communication Systems. The responsibilities of complex public agencies in maintaining effective communication systems, internal and external; the nature of the systems and problem areas.


Selected topics may include structure, leadership, power, conflict, decision making, and various applications. Prereq: CMMU 3151 or equivalent or consent of instructor.

**CMMU 6190-1 to 8. Problems in Communication.** Opportunity for students to explore, upon consultation with the instructor, areas in communication which the normal sequence of offerings will not allow. Prereq: consent of instructor.


**CMMU 6210-3. Seminar: Classical Rhetoric. Fall.** An examination of the nature and development of rhetorical theory in the classical period with special emphasis on Socrates, Aristotle, Plato, Cicero, and Quintilian.

**CMMU 6220-3. Seminar: Modern and Contemporary Rhetoric. Spring.** An examination of the nature and development of rhetorical theories from the Renaissance to the present day.

**CMMU 6270-3. Seminar: Intercultural Communication.** Examination of multidisciplinary contributions to the theory and process of intercultural communication. Development of models and the design and evaluation of programs intended to facilitate interaction across cultural boundaries. Prereq: CMMU 4270/5270 or consent of instructor.

**CMMU 6280-3. Seminar: Argumentation.** A study of philosophical and rhetorical perspective on argument plus various applications of argumentative strategies, e.g., legal, political, scientific, etc.

**CMMU 6300-3. Educational Perspectives on Communication.**

**CMMU 6910-1 to 4. Field Problems in Communication.** Analysis, observation, and field experience involving communication problems in organizations such as service, labor, industry, military, and the like. Prereq: consent of instructor.

**CMMU 6950-1 to 6. Master’s Thesis.**

**INDEPENDENT STUDY.**

**CMMU 4840-1 to 3. Independent Study. (Undergraduate).** Prereq: written consent of supervising instructor.

**CMMU 5840-1 to 3. Independent Study. (Graduate).** Prereq: written consent of supervising instructor.

**CMMU 6840-1 to 3. Independent Study. (Graduate).** Prereq: written consent of supervising instructor.

**ECONOMICS**

**Chair:** W. James Smith  
**Office:** NC 3111  
**Telephone:** 556-4413  
**Faculty: Professors:** Suzanne W. Helburn,  
David F. Bramhall, John R. Morris, Jr.,  
W. James Smith  
**Associate Professors:** Mel-Chu W. Hsiao,  
Anton D. Lowenberg  
**Assistant Professors:** Steven R. Beckman,  
Steven G. Medema, Naci N. Mocan  
**Emeritus:** David F. Bramhall, Byron L. Johnson

**Undergraduate**

Economics is the science of decision making. The rigorous and general approach which characterizes economics lends itself to a remarkably wide field of practical application. Economists are noted for major contributions in a number of fields including government policy, taxation, law, regulation, international trade and finance, international and U.S. development, marketing, environmental studies, medical policy, portfolio management, and banking. The broad and rigorous training of economics majors accounts for their significant demand in virtually every industry and government agency. Economics provides excellent preparation for advanced graduate study as well. Recent studies indicate that economics is a preferred degree for prestigious M.B.A. programs and law schools.

**Requirements for the Major**

Students majoring in economics must meet the requirements set by the College of Liberal Arts and Sciences. In addition, students must take:

- **ECON 2012:** Principles of Macroeconomics
- **ECON 2022:** Principles of Microeconomics
- **ECON 4071:** Intermediate Microeconomic Theory
- **ECON 4081:** Intermediate Macroeconomic Theory
- **ECON 4801:** Introduction to Mathematical Economics
- **ECON 3811:** Statistics with Computer Applications
- **ECON 4811:** Introduction to Econometrics

**ECON 4091:** History of Economic Thought

and 5 other courses in economics

At least six of the major courses, including at least three courses out of ECON 4071, 4081, 4091, 4801, and 4811, must be taken from CU-Denver economics faculty. Once a student has enrolled at CU-Denver, no more than three additional courses in the major may be taken outside the CU-Denver Economics Department. For every two major courses transferred in, the allowed outside courses after CU-Denver enrollment will be reduced by one. One course in political science is required. No math is formally required, except for the college algebra prerequisite for ECON 3811. Students desiring a recommendation to a graduate school in economics, however, must complete at least two semesters of calculus and, if the program is one of the high prestige Ph.D. programs, the student must have completed at least three semesters of calculus and one course in linear algebra. A second major in math is highly recommended.

A GPA of 2.5 in economics courses taken at CU-Denver is required to graduate. No grade below a C− in a core course is acceptable (the course must be repeated). No pass-fail grade may count toward the major. A maximum of one D (or D+) in any economics course may count. Graduating seniors must complete three written exercises related to current economic issues before graduation for the outcomes assessment of the Economics program. Each exercise must be typed in double space and be a minimum of ten pages in length. These three exercises may be the best papers that the student wrote in any three economics courses taken from the Economics Department at CU-Denver. See the department secretary or undergraduate advisor for details or clarification.

Students who do not have an advisor should contact the department for assignment to an advisor. Students should meet with their advisor at least twice a year.

**Requirements for the Minor**

Students wishing a minor in economics must take at least 17 semester hours in economics, including ECON 2012, 2022, and either 4071 or 4081. ECON 2012, 2022, and 4071 or 4081 must be taken from, or validated by, CU-Denver economics faculty.

**Honors in Economics**

Students wishing to earn departmental honors in economics should consult with
their advisor no later than the beginning of their senior year. *Cum laude* will be granted to students who complete an Economics major with a 3.50 GPA in all upper division (3000+)-courses in economics taken at CU-Denver with a minimum of eight such courses, and either: two additional electives in economics beyond those required for the major, taken at the 4000 or higher level, or an acceptable honors thesis. The thesis must be approved by a three member committee of department faculty and will include a presentation of the results to that committee. Students should register for the thesis as a three credit independent study which will be in addition to the regular requirements for the major.

*Magna cum laude* will be awarded to students who complete an Economics major with a 3.70 GPA in all upper division (3000+)-courses in economics taken at CU-Denver with a minimum of eight courses, and complete an acceptable honors thesis. *Summa cum laude* will be awarded to students who complete an Economics major with a 3.88 GPA in all upper division (3000+)-courses in economics taken at CU-Denver with a minimum of eight courses, and complete an outstanding honors thesis.

**Graduate**

The M.A. program in economics at CU-Denver is directed toward two groups: (1) those who look on the M.A. as a key to career development in business or government service and (2) those who desire to go on to Ph.D. studies in economics or related fields.

In serving these constituencies, the department seeks to strike a balance between technical competence in modern quantitative techniques and providing grounding in applied fields. Whereas these two aims overlap to some degree in the course offerings, prospective degree candidates should determine rather early in their studies at CU-Denver whether to emphasize quantitative and theoretical work or applied fields, or to balance the two.

In addition to offering macroeconomic and microeconomic theory, and econometrics, the department emphasizes the following: international economics, economic and business forecasting, history of economic thought, law and economics, public economics, natural resource economics, labor economics, and mathematical economics. Persons interested in the program should contact the graduate advisor in the Department of Economics at 556-4413.

**Requirements for Admission**

1. General requirements of The Graduate School (including a 2.75 undergraduate cumulative grade-point average).
2. Three letters of recommendation.
3. Sixteen semester hours of undergraduate economics.
4. Acceptable Graduate Record Examination scores if cumulative GPA is less than 3.0.
5. Two official transcripts from all colleges attended.

**Degree Requirements**

The department offers both a thesis option (Plan I) and a non-thesis option (Plan II). Both require completion of 33 semester hours.

**Core Requirements for both Plan I and Plan II (15 credit hours):**

- Microeconomic Theory (ECON 5073).
- Macroeconomic Theory (ECON 5083).
- Econometrics (ECON 5813).
- Introduction to Mathematical Economics (ECON 5803).
- Critical Evaluation of Economic Theories (ECON 6093).

**Plan I: M.A. Thesis**

1. Thesis (ECON 6950, 6 credit hours).
2. 12 hours of electives, at least half of which must be at the 6000 level or above.

**Plan II: Without Thesis**

A total of 18 semester hours in addition to the core requirements. Two fields of concentration are required. Each field consists of a minimum of one 5000-level course and one 6000-level course (the specific courses to be approved by the faculty member in charge). Of the remaining required hours, at least half must be at the 6000 level or above. An M.A. paper can substitute for one of the field examinations, with approval of the academic advisor and department chairperson.

**Courses**

**ECON 2001-3. Topics in Economics.** Study of special topics in economics to be selected by the instructor. May be repeated for credit when topics vary.

**ECON 2012-3. Principles of Economics: Macroeconomics.** Purpose is to teach fundamental principles, to open the field of economics in the way most helpful to further a more detailed study of special problems, and to give those not intending to specialize in the subject an outline of the general principles of economics. Subject matter includes topics of inflation, unemployment, national income, growth and problems of the national economy, stabilization policy, plus others at the discretion of the instructor. Open to qualified freshmen.

**ECON 2022-3. Principles of Economics: Microeconomics.** Complementary to and normally taken following ECON 2012. Subject to determinants of price determination in a market system composed of households and firms, resource allocation and efficiency of various market structures, plus others at the discretion of the instructor. ECON 2012 is not a prerequisite for ECON 2022.


**ECON 3001-3. Topics in Economics.** Study of special topics in economics to be selected by the instructor. May be repeated for credit when topics vary.

**ECON 3100-3. D-Economics of Race and Gender.** The course presents an overview of the determinants of wages in the labor market. The main emphasis is on the investigation of the evidence and theories of the wage differentials that appear to be associated solely with race and sex. Prereq: ECON 2022.

**ECON 3160-3. Economic Issues of the 1990s.** Topics in the likely development of the economy in the next decade, including global competition, reforms in Eastern Europe, inflation, unemployment, environment, population, and sociopolitical interaction with economics.

**ECON 3200-3. Women and the Economy.** An examination of women's roles in the economy from the perspective of traditional and radical economies, history of women's economic roles, labor force participation, labor market discrimination, feminization of poverty, economics of households and the economic consequences of the women's movement.

**Note:** Unless otherwise specified, ECON 2012 and 2022 are prerequisites for all the following courses.

**ECON 3790-3. Consumer Economics.** Application of microeconomics to the problems of the ordinary consumer: budget management, purchases, interest, etc. Intended for non-majors. No prerequisites.

**ECON 3811-4. Statistics with Computer Applications.** (ANTH 4050, SOC 3121.) Introduction to statistical methods and their application to quantitative problems in economics and social sciences.
Recitation is required. Prereq: college algebra or equivalent or consent of instructor. Prereq: ECON 2012 and 2022. ECON 3939-1 to 3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: junior standing and 2.75 grade-point average.

ECON 4001-3. Topics in Economics. Study of special topics in economics to be selected by the instructor. May be repeated for credit when topics vary. ECON 4071-3. Intermediate Microeconomic Theory. Production, price, and distribution theory. Study of value and distribution theories under conditions of varying market structures, with special references to the contribution of modern theorists. Prereq: ECON 2012 and 2022. ECON 4081-3. Intermediate Macroeconomic Theory. National income and employment theory. Primary emphasis placed on determination of employment and prices. Problems of unemployment and inflation analyzed and appropriate policies considered. Prereq: ECON 2012 and 2022. ECON 4150-3. Economic Forecasting. This course teaches forecasting techniques used in business and government projecting trends and short-term fluctuations. Actual data are employed in instruction and labs. State-of-the-art spreadsheet and forecasting algorithms are introduced as part of the course work. Prereq: ECON 3811 or approval of instructor. ECON 4170-3. Comparative Socialism. (P SC 4625.) Comparative analysis of public policy of governments describing themselves as socialist - as committed to abolishing social classes, ending alienation, and achieving equality and abundance; emphasis on historical conditions, political and economic organization, work incentives, education, technology and popular culture. Prereq: ECON 2012 and 2022. ECON 4520-3. Economic Problems. ECON 4520 for majors in economics; others by consent of instructor. Designed to give students a chance to evaluate critically some practical and theoretical problems under supervision, and to present results of their thinking to fellow students and instructors for critical evaluation. Prereq: for 5000 level, consent of instructor.

UPPER DIVISION/GRADUATE LEVEL

Students enrolled at the 5000 level may expect additional work and evaluation commensurate with graduate students. ECON 4050/5050-1 to 8. Special Economic Problems. ECON 4050 for majors in economics; others by consent of instructor. Designed to give students a chance to evaluate critically some practical and theoretical problems under supervision, and to present results of their thinking to fellow students and instructors for critical evaluation. Prereq: for 5000 level, consent of instructor.

ECON 4090/5090-3. History of Economic Thought. Development of contemporary economic thought from the mercantilists through the classical, Marxist, neoclassical, institutionalist, and Keynesian traditions to the present time. Alternative approaches to scientific activity adopted and developed by the different schools of economics in the context of the economic history of the time. ECON 4110/5110-3. Monetary and Banking Systems. Survey of major monetary and fiscal institutions such as commercial banks, the federal reserve system, and savings institutions; and the structure of debt. The relationships between households and firms and financial intermediaries are explored and the tools available to macroeconomic policy makers are described and evaluated. ECON 4120/5120-3. Monetary Theory and Policy. An analysis of monetary models and money as a policy determinant in national and international economies. Topics include the importance of interest rates, the effectiveness of monetary and fiscal policy, examination of portfolio balance models and international models. Prereq: for 4000 level, ECON 4110; for 5000 level, ECON 5110. ECON 4190/5190-3. Radical Political Economy. An introduction to the Marxian world view including the dialectic, Marx's view of human nature and his theory of alienation. Course focus is volume I of Capital and contemporary extensions of this analysis of capitalist production and capital accumulation. ECON 4200/5200-3. Modern Radical Political Economy. Analysis of contemporary capitalism from Marxian and other critical viewpoints. Issues will include race, gender, alienation, ecological destruction, and imperialism. Also, the problems of existing socialist societies and of building effective decentralized self-government. Prereq: for 4000 level, ECON 4190 or consent of instructor; for 5000 level, ECON 5190 or consent of instructor.

ECON 4210/5210-3. Public Finance. Survey of topics dealing with the economics of government activity, including the provision of public goods, the economics of the political process, welfare programs, pollution externalities, benefit-cost analysis, the U.S. tax structure, and the effects of taxes on economic behavior, economic performance, and the distribution of income. ECON 4220/5220-3. The Economics of Politics and Government. The economic theory of politics, including the theory of public goods, voting, elections, political parties, pressure groups, political competition and rent-seeking, and constitutional political economy. Prereq: ECON 2022. ECON 4230/5230-3. Law and Economics. Applications of economic theory to legal decision making; topics covered include property law, tort law, contract law, the common law, crime and punishment, comparisons to traditional forms of legal decision making and criticisms of the economic approach. Prereq: ECON 2022. ECON 4410/5410-3. International Trade. The structure of world trade and gains from trade are investigated using both competitive and imperfectly competitive theories of trade. Industrial policies, tariffs and subsidies can be in the home country's best interest. The conditions required are explored and the relative performance of countries that support domestic industries is evaluated. Retaliation, negotiation, sanctions and multilateral cartels are all options in a complex world. It is assumed students understand microeconomics at the principles level. Graduate students should know calculus or obtain the instructor's permission.

ECON 4420/5420-3. International Finance. The international adjustment process, including the foreign exchange market, balance of payments disequilibria, price and income adjustment, fiscal and monetary policy, and the international monetary system.

ECON 4520/5520-3. Economic History of the United States. Survey of the events and circumstances which shaped the spectacular growth of the United States economy since Colonial times. Examines the record and sources of growth, including changes in the labor force, capital accumulation, and technological change. Reviews development of sectors of the economy such as the financial market, agriculture, and transportation. Covers cataclysmic economic events such as slavery and the Civil War, and the great depressions, as well as evolutionary
economic change, such as the emergence of the modern corporation, and of labor unions.

ECON 4530/5530-3. Economics of Natural resources. Looks at natural resource uses and how they have changed over time. Examines economic models of renewable resource management and models of exhaustible resource depletion. Analyzes decisions made by private firms and by government affecting the methods and rate of resource development. Examines the effects of resource development on economic growth and environmental quality.

ECON 4600/5600-3. Introduction to Human Resources. Economics of investments in people, including the economics of poverty and the application of cost benefit analysis to social welfare programs.

ECON 4610/5610-3. Labor Economics. Study of problems associated with determination of wages, hours, and working conditions in the American economy. History and analysis of economic effects of trade unionism and other social institutions, including agencies of formal government; introduction to manpower studies.

ECON 4620/5620-3. Economics of Collective Bargaining. Scientific analysis of processes by which labor and management democratically reach agreements; how differences between labor and management are settled by means of grievance procedure and arbitration; and overall economic effect of collective bargaining on goods produced by the national economy. Demonstrations, workshop, and lectures.

ECON 4660/5660-3. Health Economics. Presents an economic analysis of the health/medical sector of the U.S. economy. Lectures, assigned readings, and special projects are used to increase the student’s awareness of issues in health care.


ECON 4740/5740-3. Monopoly and Competition. This course involves the student in examining the structure of markets and how features such as numbers of firms and firm size can affect competitiveness and innovations in our economy. Considerable time will be spent examining the set of policies that affect the structure of markets—antitrust law.

ECON 4760/5760-3. Government Regulation of Business. Examines the economic theory and institutional features of a wide array of regulatory topics. It will survey the current literature on models of optimal pricing and look into practices of public utility regulation, transportation regulation and deregulation, and environmental and worker safety regulations, etc.

ECON 4770/5770-3. Economic Development—Theory and Problems. Introduction to the theory and practice of economic development. Topics include development and growth models, economic planning, income distribution, human and capital resources, foreign investment and the multinationals, technology transfer, trade and development. Discussions include the current issues on world debt, economic stabilization, the new protectionism, empirical studies, and country examples of development.

ECON 4800/5803-3. Introduction to Mathematical Economics. Introduction to the use of mathematics in micro and macro economic analysis. Emphasis on model building techniques, solution methods, and economic interpretations. Prereq: MATH 1070, 1080, or equivalent, ECON 2012, 2022, or 3000 or consent of instructor.

GRADUATE LEVEL

ECON 5073-3. Microeconomic Theory. Fundamental features of partial equilibrium theory of the firm, consumer, and market. General equilibrium and welfare economic topics will be examined. Features of the model that have empirical applications will be accented. Prereq: ECON 4071 (or equivalent), knowledge of elementary calculus and linear algebra, or consent of instructor.

ECON 5083-3. Macroeconomic Theory. This course will examine the major macroeconomic models within a common framework. Differences in the foundations, structure and policy implications of the competing models will be analyzed. Prereq: ECON 4081 (or equivalent), knowledge of elementary calculus, or consent of instructor.

ECON 5150-3. Economic Forecasting. This course teaches forecasting techniques used in business and government projecting trends and short-term fluctuations. Actual data are employed in instruction and labs. State-of-the-art spreadsheet and algorithms are introduced as part of the course work. Prereq: ECON 3811 or approval of instructor.

ECON 5813-3. Econometrics. Econometric methods and their applications to quantitative economic problems, simple and multiple regression models and problems encountered in their application are developed in lectures and applied computer projects. Prereq: ECON 4811 or consent of instructor.

ECON 5939-1 to 6. Cooperative Education. ECON 6000-3. History of Economic Thought. This course fosters or advances the student’s appreciation of the technical apparatus of current economic concepts and introduces students to major theoretical controversies in the development of economic analysis. In addition to secondary sources the student must read in the original texts of certain great economic writers from the industrial revolution to the present.


ECON 6020-3. Macroeconomic Theory I. Considers general equilibrium and aggregative analysis in economic theory with particular emphasis given to the theory of employment, consumption, and investment.

ECON 6030-3. Microeconomic Theory II. Continuation of ECON 6010.

ECON 6040-3. Macroeconomic Theory II. Continuation of ECON 6020.


ECON 6093-3. Critical Evaluation of Economic Theories. This course subjects the theory taught in the other courses to critical scrutiny by providing an understanding and critique of the scientific method as employed in economics: an analysis of the nature, strengths, and weaknesses of competing theories; comparison and critique of selected research programs generated within these traditions using methodologies from the philosophy of science. Prereq: ECON 4071, 4081; preferably ECON 5073 and 5083.

ECON 6100-3. The Classical and Radical Economic Traditions. Comprehensive
study of classical ideas of economic progress found in writings of Smith, Ricardo, and J. S. Mill, compared with the theories of economic change of Marx, Veblen, Commons and contemporary followers.

**ECON 6110-3. Money and Central Banking.** Monetary and financial institutions with focus on relationships among domestic monetary policy, interactional credit, and balance of payments.

**ECON 6210-3. Advanced Monetary Theory.** Major contributions to monetary and banking theory up to the present day and current issues.

**ECON 6190-3. Seminar in Radical Political Economy.** Continuation of ECON 4190/5190. Consideration of the whole of Marx's economics as presented in the three volumes of *Capital*, with special emphasis on volume III; critical evaluation of marx's economics; overview of alternative contemporary marxian extensions and interpretations of Marx's analysis of capitalist development. Prereq: ECON 4190/5190 or consent of instructor.

**ECON 6210-3. Public Finance I.** Taxation, public expenditures, debts, and fiscal policy. Role of public finance in terms of peace and war. National, state, and local taxation, with some special attention to the state of Colorado.

**ECON 6220-3. Public Choice.** Advanced economic theory of political and governmental processes, including the theory of public goods, club goods, political allocations through majority rule voting, alternatives to majority rule, two-party and multiparty electoral systems, rent seeking and interest group models of politics. Prereq: ECON 5073 or permission of instructor.

**ECON 6250-3. Urban Economics.** Intensive study of urban economic issues. Particular issues will vary from time to time, but class will examine the literature and analyze the economic aspects of urban transportation, poverty, housing, urban development, and the provision of public services. Prereq: ECON 4250/5250, or consent of instructor.

**ECON 6260-3. Urban Land Economics.** Critical analysis of alternatives with respect to land use in urban areas; the forces at work, the institutional arrangements, economic incentives, environmental consequences, the quality of life.

**ECON 6270-3. Urban Transportation.** Problems and methodology in dealing with urban transportation. Planning models, characteristics of systems, direct and indirect costs and benefits with emphasis on Denver. Required paper on some aspects of transportation in Denver. Prereq: ECON 4270 or equivalent.

**ECON 6280-3. Housing.** Evaluation of problems of housing in America. Demand and supply including structure of market, elasticities, segregation, location cost of production, and regulation. Prereq: ECON 4250 or equivalent.

**ECON 6300-3. Economics as a Social Science.** The content and methods of economics are reviewed and compared with our knowledge of and methods of studying the total social system.

**ECON 6410-3. International Trade.** Contemporary and classical literature on theories of international trade. Topics covered include the determination of the pattern and terms of trade, the relationship between growth and trade, and commercial policy.

**ECON 6420-3. International Finance.** Topics in international finance, including exchange rate determination, the adjustment process, international financial markets, and the international monetary system.


**ECON 6510-3. Economic History.** Advanced study of historical theories of economic development. Applications of these theories to development of the U.S. economy, and comparison of development experiences in other nations. Specific topics may change from semester to semester, but will emphasize and critique the methodology of economic history.

**ECON 6530-3. Natural Resources Economics.** Application of economic theory to physical resources such as land and renewable resources, as well as to exhaustible resources. Prereq: ECON 4071 or 4081.

**ECON 6540-3. Environmental Economics.** Effects of economic growth on the environment; application of economic theory of external diseconomies, cost-benefit analysis, program budgeting and welfare economics to problems of the physical environment. Prereq: consent of instructor.

**ECON 6610-3. Labor Economics.** Advanced study of the history, nature, and function of labor organizations; the process of wage determination; and the formation of public policy.

**ECON 6660-3. Seminar: Human Resources.** The economics of investment in human capital including the economics of poverty and the application of cost-benefit analysis to social welfare programs.

**ECON 6700-3. Seminar: Regional Economics.** Theory of regional analysis, problems of regional research such as location of industry and regional resources.

**ECON 6720-3. Comparative Economic Systems.** Comparative analysis of the economic systems of different countries and stages of development; interrelations with the production and distribution of wealth and with systems of property; contemporary approaches to economic planning and economic integration.

**ECON 6740-3. Comparative Industrial Organization and Planning.** A study of the ways in which common decisions are made and implemented under various patterns of industrial organization, ranging from those relying on the pure-market systems to those employing a high degree of centralized planning.

**ECON 6750-3. Seminar: Industrial Organization and Control.** The large firm in relation to its rivals, suppliers, and customers (theory and industry studies); social control of business through antitrust and other government regulation.

**ECON 6770-3. Economic Planning and Development.** Deals with role of planning in economic development with particular reference to investigation of planning problems, especially in less developed countries.

**ECON 6810-3. Econometrics and Forecasting.** This course deals with advanced topics in cross-sectional and time-series analysis. Important theoretical and empirical issues encountered in applied work in economics and business are emphasized. Main topics that are covered include problems of structural change and model misspecification, instrumental variables, simultaneous equations models, distributed lags, maximum likelihood estimation, qualitative and limited dependent variables, Arima models, vector-autoregressions, issues on exogeneity and causality. Through the use of econometric software programs and actual data, students are trained on how to execute estimation and forecasting projects soundly.


ECON 6910-3. Practicum in Teaching College Economics. Classroom teaching of introductory-level principles of economics discussion sections under the supervision of an economics faculty member. Seminar analysis of problems in the teaching of introductory economics, introduction to theoretical learning and instruction, demonstrations and evaluation of alternative teaching strategies and materials for use in discussion sections, appraisal of student teaching, experience designing learning activities and evaluation instruments. Prereq: ECON 4071, 4081.


INDEPENDENT STUDY.

ECON 4840-1 to 3. Independent Study.
ECON 6840-1 to 3. Independent Study.

ENGLISH
Chair: Richard VanDeWeghe
Office: 1015 9th Street Park
Telephone: 556-8304

Faculty: Professors: Rex S. Burns, Robert D. Johnston, Marvin Loflin, Elihu H. Pearman, Mary Rose Sullivan, Peter L. Thorpe
Assistant Professors: Colleen Donnelly, Susan Linville, James F. Stratman, Catherine A. Wiley

Undergraduate
An undergraduate wishing to major in English may choose one of two basic areas of emphasis: Literature or Writing. Each emphasis has its own requirements for graduation. Lists of required and suggested courses in each area of emphasis may be obtained from the English department office at 1015 9th Street.

LITERATURE MAJOR
The course of study offered by the Department of English is designed to develop a student's ability to read literature responsibly and imaginatively, to foster an understanding and appreciation of our literary inheritance, and to provide the historical perspective from which to evaluate contemporary writing. Careful study of the use of the English language also should help a student to resist the misuse and corruption of language in politics, the media, and elsewhere. Students who complete the program in English are expected to have mastered the ability to express their ideas in clear, succinct, and capable prose.

English majors learn to acquire and synthesize information and to present their ideas and opinions skillfully. They find employment in fields in which the sophisticated use of language is necessary for achievement and advancement. Many graduates go on to post-graduate study, not only in writing and literature, but to schools of medicine, law, education, journalism, and business.

1. Requirements for the Literature Major. Students majoring in English Literature must present a total of 39 hours in English (excluding ENGL 1000, 1010, 1020, 2024, 3154, and 3170), of which 27 hours must be earned in upper division courses. None of the required 39 hours may be taken on a pass/fail basis. Only courses completed with a grade of C or above may be counted toward the major. At least 15 upper division hours of the students' work in English must be taken from CU-Denver English faculty. Students planning to major in English must consult with an advisor as soon as possible. Two courses (6 hours) are specifically required:

   ENGL 1400. Introduction to Literary Studies
   ENGL 3001. Critical Writing

   Students also must choose any six courses (18 hours) from the following 14 electives:
   1. ENGL 3661. Shakespeare
   2. ENGL 4200. History of the English Novel
   3. ENGL 4270. History of American Literature I
   4. ENGL 4280. History of American Literature II
   5. ENGL 4300. History of the Drama in English
   6. ENGL 4320. History of Poetry in English
   7. ENGL 4500. Medieval Literature
   8. ENGL 4520. English Renaissance
   9. ENGL 4540. Restoration and 18th Century
   10. ENGL 4560. English Romanticism
   11. ENGL 4580. The Victorian Age
   12. ENGL 4290. Twentieth Century Fiction
   13. ENGL 4460. Contemporary World Literature
   14. ENGL 4600. Modern British and Irish Literature

2. College Core Courses for Literature Majors. Students must complete the College of Liberal Arts and Sciences Core Curriculum requirements as specified in the CU-Denver Catalog and Schedule of Classes.

3. Electives. Elective hours may be selected at the student's discretion, but students are urged to work with their advisor in outlining a program in which electives and requirements support each other. Up to 12 hours may be earned in the Cooperative Education program. Students also may earn up to 24 hours outside the College of Liberal Arts and Sciences.

Students needing information about the literature major may call the Department of English office at 556-8304.

Departmental Honors. English Literature majors interested in graduating with honors should confer with the honors advisor as soon as possible and no later than the beginning of the spring semester of the junior year.

Additional Information. Students who contemplate a career in teaching should consult with the School of Education, which supervises the teacher education program. They should plan to fulfill at least some of the college requirements during their freshman and sophomore years.

For additional literature courses see Ethnic Studies.

Students needing information about the Literature major may call the Department of English office at 556-8304.

WRITING MAJOR
In addition to the Literature major, the English department offers the Writing major. Especially designed for future writers, this major offers a wide range of intensive writing experiences combining such areas as technical, creative, and critical writing. The student is trained in the rhetoric of the arts and humanities, the social sciences, and the natural and physical sciences.

1. Requirements for the Writing Major. Hours
   ENGL 2024. Intermediate Composition ........ 3
   ENGL 3084. Advanced Composition .......... 3
   ENGL 2154. Introduction to Creative Writing . . . . 3
   ENGL 3001. Critical Writing .................. 3
   or approved substitute
   ENGL 3154. Technical Writing ............... 3
   ENGL 3184. Writing Topics ................... 3

   English Literature courses above freshman level ...... 9

   ENGL 4060. Semantics
   ENGL 4080. History of the English Language
Students must complete the study. Independent study forms are available.

Requirements:
3. Arrange for supervision from a faculty member, and enroll in an independent course allows students to become of one independent study in one of three parts of the Graduate Record Exam.

College Core Courses for Writing Majors.
Students must complete the College of Liberal Arts and Sciences Core Curriculum requirements as specified in the CU-Denver Catalog and Schedule of Classes.

3. Electives. Elective hours may be selected at the student's discretion, but students are urged to work with their advisor in outlining a program in which electives and requirements support each other. Up to 12 hours may be earned in the Cooperative Education program. Students also may earn up to 24 hours outside the College of Liberal Arts and Sciences. Students needing information about the writing major may call the Department of English office at 556-8304.

MINORS IN THE DEPARTMENT OF ENGLISH
The Department of English also offers two separate minors.

Literature Minor
This program is designed for students who are interested in the study of English Literature but who have elected to major in another area. The recommended series of courses allows students to become acquainted with some of the methods of literary study and with a number of the most important literary works.

Requirements:
ENGL 1200. Introduction to Fiction, or ENGL 1300. Introduction to Poetry and Drama 3
ENGL 1400. Introduction to Literary Studies 3
ENGL 3001. Critical Writing 3

with a variety of critical methodologies. In Plan II, students study rhetoric and language studies as those fields relate to the Teaching of Writing. Plan III offers a broad view of the connections between traditional and emerging areas of Applied Language study. Contact the Director of Graduate Studies for more detailed information on these plans and on admission requirements.

The graduate courses in English are also applicable to the Master of Humanities program at CU-Denver.

For more information contact the graduate director at 556-8304.

Courses
ENGL 1000-1. Writing Proficiency. ENGL 1000 is not a course, but a writing proficiency test which carries one credit hour toward graduation. CLAS students (first enrolled between Spring 1982 and Summer 1990) are required to meet a writing proficiency requirement by either passing the ENGL 1000 proficiency test or passing ENGL 1020 with a grade of C (2.0) or better. Note: students do not have to register for ENGL 1000 if they simply wish to take ENGL 1010 or 1020. The proficiency test is given once only in the middle of each semester. Those who pass the test will receive a grade of P in ENGL 1000. Those who fail will receive a grade of F in ENGL 1000 until they meet the proficiency requirement by passing ENGL 1020 with a grade of C or better, or by passing the ENGL 1000 test the next time it is offered. Once a student passes 1020 or 1000 the F will become a P.

ENGL 1006-3. Reading for Speakers of Other Languages. This course is designed for ESL students who need to improve their reading and vocabulary skills. Students will increase their reading ability through vocabulary building, work attack strategies, and reading analysis.

ENGL 1007-3. Composition for Speakers of Other Languages I. This is the first course in the ESL composition sequence. Writing begins with sentence-level development and continues with the development of paragraphs based on Western rhetorical patterns. Grammar appropriate to students' needs will be incorporated into the class.

ENGL 1008-3. Composition for Speakers of Other Languages II. Continued work on grammar, syntax, and the mechanics of writing. Writing begins with paragraphs and moves into essay writing.

Prereq: ENGL 1007 or CMMU 1410 or ESL coordinator's approval.
ENGL 1009-3. Advanced ESL Writing Skills. This is the third course in the ESL composition sequence. Emphasis is placed on more complex grammatical problems and on the development of longer compositions. Prereq: ENGL 1008 or CMMU 1420 or ESL coordinator's approval.

ENGL 1010/1020-3. Writing Workshop I and II. Writing Workshop I focuses on the abilities and skills needed to write effective expository prose. This course emphasizes frequent writing, both in and out of class, with special attention to writing short essays well. Writing Workshop II develops the writing of long, well-structured and graceful essays. Students are placed in ENGL 1010 or 1020 after diagnostic testing during the first week of classes to determine their writing needs.

The following sequence of courses, ENGL 1110-1160, is designed to provide an introduction to the principal literary forms for students who are not planning to major in English. All students are welcome and students from colleges other than the College of Liberal Arts and Sciences are particularly invited to attend. The Department of English recommends that students enroll in the entire sequence (although each five-week module may be registered for separately).

ENGL 1110-1. Fiction. This course begins by introducing students to the simplest fictional expressions (folk and fairy tales) and concludes with the study of contemporary short story or novel.

ENGL 1120-1. Language. This course introduces students to the historical, physical, psychological, and intellectual aspects of both formal and colloquial language.

ENGL 1130-1. Poetry. The course looks at a variety of poetic forms - everything from nursery rhymes to the lyrics of popular songs, from advertising slogans to formal poetry. The emphasis is on the pleasure derived from reading and hearing poetry.

ENGL 1140-1. Drama. An introduction to the basic concerns of drama - the human need for enactment - and the value of dialogue, monologue, and gesture.

ENGL 1150-1. Nonfiction Prose. This course explores the uses and abuses of prose. It will examine the conventions and techniques whereby the everyday use of language produces its remarkable effects.

ENGL 1160-1. Film. This course introduces students to the art of film and its role in contemporary society. Course work will focus on specific screenplays.

ENGL 1200-3. Introduction to Fiction. Students in this course will read a variety of short stories and novels. The assigned readings will introduce class members to the works of famous authors as well as to major themes, elements, and techniques of fiction.

ENGL 1300-3. Introduction to Drama and Poetry. Reading, discussing, and writing about poems and plays. The course is designed to help the student understand what poems and plays mean and how they mean (i.e., what makes a poem, after all, a "poem"?) It is also intended to help the student write well about poems and plays as the student becomes a more confident, thoughtful reader.

ENGL 1400-3. Introduction to Literary Studies. This course is designed for students who plan to major in English or who are seriously interested in literature. Its aim is to help students develop a sense of literary techniques and issues so they can bring an improved critical sensitivity to their reading and writing. This class is the prerequisite for ENGL 3001.

ENGL 2024-3. Intermediate Composition. Emphasis on the documented essay and the research paper in a workshop setting. Prereq: ENGL 1020 or consent of instructor.

ENGL 2060-3. Introduction to Language Study. This course presents a survey of what is known about language and the methods used by linguists to arrive at the knowledge. It covers language origins and history, basic phonetics, phonology, morphology, lexicology, grammar, syntax, semantics and pragmatics. Special attention is paid to first language acquisition and to language in society.

ENGL 2154-3. Introduction to Creative Writing. Reading, discussing, and writing short fiction and poetry in a workshop setting.

ENGL 2250-3. Introduction to Film. An introduction to the technique and content of films: camera work, editing, acting, sound, and theme in the films of Chaplin, Griffith, Murnau, Hitchcock, Ford, Riefenstahl, Godard, and others.

ENGL 2300-2390-3. Topics in Literature. These courses supplement the regular program of the Department of English. Among the topics offered in recent years are American wit and humor, literary perceptions of motherhood, science fiction, opera as drama, Asian-American literature, film and art, literary classics of science, contemporary women writers. Students also may enroll for these courses at the 3000 level - see ENGL 3300-3390.

ENGL 2400/3400-3. Introduction to Women's Studies: Survey of Feminist Thought. (HIST 2540/3540.) A survey of the varieties of British and American feminist ideas from the French Revolution to the present, using both fiction and nonfiction texts.

This course serves as an introduction to the women's studies minor.

ENGL 2401 thru 2405-3. Topics in Writing. These courses supplement the regular program of the department. Among the topics offered are the following: screenwriting, freelance magazine writing, writing autobiography, and scientific writing. We may also offer these courses at the 3000 level.

ENGL 2416-3. Magazine Writing. An intensive, practical course in writing nonfiction with an emphasis on journalistic approaches for daily, weekly, and monthly publications.

ENGL 2418-3. Introduction to Screenwriting. This course introduces students to the basics of screenwriting. Its purpose is to offer students a foundation in the structural and stylistic elements that are essential to every good screenplay. Students will develop and begin to write an original screenplay.

ENGL 2510-3. The Classical Heritage. This course examines some of the most influential literary works of Greece and Rome. Among the Greeks, the epics of Homer and the tragedies of Sophocles as well as the philosophical writings of Plato and Aristotle will usually receive special attention. Virgil and some of the Roman historians also will be studied. The class will usually conclude with a brief look at the writings of St. Augustine.

ENGL 2520-3. The Bible as Literature. This course introduces students to biblical literature. The various genres of writing in Hebrew (history, prophecy, wisdom literature) will be read and discussed. Also to be studied are representative sections from the New Testament, including the gospels and the writings of Paul.

ENGL 2530-3. Masterpieces of World Literature I. Masterpieces of world literature (exclusive of English literature) from the Medieval period to the end of the 18th century. The primary focus of the course will be on the development of Western thought as it is reflected in, and influenced by, significant works of the European tradition.

ENGL 2540-3. Masterpieces of World Literature II. Masterpieces of world literature (exclusive of English literature) from the 19th and 20th centuries. The focus of the course will be on the development of the modern world, as we experience it in the Western tradition, from the Romantic movement and the French Revolution to the present.

ENGL 2550-3. Masterpieces of Literature in English I. Great works of the literature in English: the early periods. The course will focus on significant works in English
from the Medieval period, the Renais-
sance, and the 18th century, demonstrat-
ing the connection between the dominant
ideas of the periods and the modes of their
expression.

ENGL 2560-3. Masterpieces of Literature
in English II. Great works of the literature
in English: the 19th and 20th centuries. A
continuation of English 2550, the second
semester will not only continue to trace
the development of the styles and preoc-
cupations of English literature, but will
also be concerned with what happened to
those literary traditions as they were
transplanted to foreign environments around the
world.

ENGL 2794-3. Survey of Ethnic Litera-
ture. (ETST 2794.)

ENGL 3040-1 to 3. Independent Study.

Note: Before taking any 3000-level course
in English, a student must have earned 24
semester hours of college credit.

ENGL 3001-3. Critical Writing. This
course introduces students to literary the-
ory and also provides extensive practice
in writing about literature. This course is
required for literature majors. Students
should plan to enroll in this course during
their junior year. Prereq: for literature
majors, ENGL 1400.

ENGL 3010-3. Honors in Humanities Wir-
ting Seminar.

This course is a seminar in the writing of
poetry. It may be repeated for up to 6
hours credit. Prereq: ENGL 2154 or con-
sent of instructor.

This course is a seminar in the writing of
fiction. It may be repeated for up to 6
hours credit. Prereq: ENGL 2154 or consent
of instructor.

ENGL 3060-3. History of Film I. This
course surveys the history of film from its
beginnings until 1941 and examines how
the essential techniques of film (script
writing, editing, acting, laboratory work,
and sound production) were mastered.
Films of merit and interest by Melies, Griff-
tith, Chaplin, Keaton, Eisenstein,
Pudivkin, Murnau, Lang, Dreyer, Flaherty,
Welles, and others will be studied.

ENGL 3070-3. History of Film II. This
course surveys the history of film from
1941 to the present. The emphasis will be
on the examination of films as reflections of
the interests of their creators. Among
the directors to be studied are Welles,
Reed, Ford, Hawks, Rossolini, Kurosawa,
and Bergman.

ENGL 3084-3. Advanced Composition.
Reading, discussing, and writing about the
ways writers use language to affect others.
Focus on the power of language in such
areas as politics, sexism, advertising, prej-
udice, and propaganda. Equal focus on
developing individual student writing styles at advanced levels. Prereq: ENGL
1020 or 1034 or consent of instructor.

ENGL 3154-3. Technical Writing. This
course introduces the study and writing of
technical documents. The emphasis will
be on the processes, style, structure, and
forms of technical writing. Attention will
be paid to audience analysis, organization,
clarity, and precision. Prereq: ENGL 1020
or consent of instructor.

ENGL 3170-3. Basics of Writing. This
course introduces the study of writing for
business. The emphasis will be on style,
structure, memoranda, letters, resumes,
and short reports. Prereq: ENGL 1020 or
consent of instructor.

ENGL 3184-3. Writing Topics. Writing top-
ics are individual papers based on upper
division courses from the arts and human-
ities, natural and physical sciences, and
social sciences. This course is designed
for writing majors only and may be
repeated for up to 9 hours credit.

ENGL 3300-3390-3. Topics in Literature.
These courses supplement the regular
program of the department. Among the
topics offered in recent years are: Ameri-
can wit and humor, literary perceptions
off motherhood, science fiction, opera as
drama, Asian-American literature, film and
art, literary classics of science, and con-
temporary women writers. Students also
may enroll for these courses at the 2000
level—see ENGL 2300-2390.

ENGL 3401 thru 3405-3. Topics in Wir-
ting. These courses supplement the regu-
lar program of the department. Among the
topics offered are the following: screen-
writing, freelance magazine writing, writ-
ing autobiography, and scientific writing.
We may also offer these courses at the
2000 level.

ENGL 3417-3. Writing for the Mass Media.
This course will examine public relations
writing techniques and journalistic style,
public relations theory and ethics, and
practical client work.

ENGL 3418-3. Advanced Screenwriting.
This course offers students opportunities
at advanced levels to conceptualize, struc-
ture, and write screenplays as begun in
the introductory-level course. Building
upon the structural and stylistic elements
in that course, students will complete an
original feature-length screenplay. Prereq:
ENGL 2418.

ENGL 3630-3. Chaucer. A study of
Chaucer’s major works with special
emphasis on the Canterbury Tales. The
course will begin with a brief introduction
Middle English.

ENGL 3661-3. Shakespeare. This course
introduces students to some of Shake-
peare’s major plays and poems. Among
the plays usually studied are Richard II,
Romeo and Juliet, Measure for Measure,
Othello, King Lear, Anthony and Cleopatra,
and The Tempest.

ENGL 3680-3. Milton. The course intro-
duces students to some of Milton’s major
works of prose and poetry. Among the
works usually studied are Areopagitica,
Paradise Lost, Paradise Regained, Samson
Agoristes, as well as the noblest poem in
English, Lycidas.

ENGL 3794-3. Survey of Ethnic Litera-
ture. (ETST 3794.)

ENGL 3840-1 to 3. Independent Study.

ENGL 3939-1 to 3. Internship/Coopera-
tive Education. Internships are employ-
ment situations designed and supervised
by members of the faculty; students use
concepts and skills developed in the class-
room in business and public service con-
texts. Prereq: junior standing and 2.75
grade-point average. Before enrolling, stu-
dents should contact the Center for
Internships and Cooperative Education.

ENGL 4010-3. Advanced Composition for
Secondary School Teachers. In this
course, students will examine the theory
and methods of teaching writing in the
secondary school. Prereq: ENGL 1020 or
consent of instructor.

ENGL 4020-3. Literature for Adolescents.
(SECE 5380.) This course focuses on the
reading and evaluating of books (nonfic-
tion as well as fiction) for junior and senior
high school students.

ENGL 4210-3. Development of
the English Novel II. The course is
designed to give an overview of the English
novel from the mid-nineteenth century to
World War II, emphasizing the important
development which the form underwent in
the hands of notable novelists. Representa-
tive works by Charles Dickens, Charlotte
Bronte, George Eliot, Henry James, Joseph
Conrad, D. H. Lawrence, and Virginia
Woolf will be discussed and analyzed.

ENGL 4250-3. 20th Century Fiction. This
course will deal with novels originating in
a variety of countries in an effort to see the
similarities and differences that varying
nationalities bring to the genre.

ENGL 4280-3. History of American Litera-
ture II. This course begins with the late
19th century (Twain, Howells, James) and
continues with an examination of major
writers of the 20th century up to 1941.
ENGL 4460-3. Contemporary World Literature. This course surveys important works and trends in poetry, drama, and fiction since World War II.

ENGL 4460-3. Contemporary Chicano Literature. (ETST 4768.) This course introduces students to the major motifs in contemporary Chicano literature.

ENGL 4700-3. Old English.

ENGL 4700-3. Honors Essay. This course is designed for students taking departmental honors in English. Students who are interested in obtaining honors must consult the honors advisor.

ENGL 4740-1 to 3. Honors Writing Project. Students taking honors in the general writing major must complete an honors project under the direction of their honors project director. Open only for students in honors writing.

ENGL 4770-3. Topics in English.

ENGL 4771-3. Senior Seminar: Topics in Literature.

ENGL 4781-3. Major American Authors: Senior Seminar.

ENGL 4840-1 to 3. Independent Study.

ENGL 4920-3. Directed Readings I. For students who, upon reaching their senior year, wish to explore areas of English literature not covered by their regular course work. This course is required for students who intend to graduate with honors in English and is strongly recommended for students planning to continue with graduate work in English. Students should consult the honors advisor before registering for this course.

ENGL 4927-3. Directed Readings II. A continuation of ENGL 4920 for students wanting an additional opportunity to read in English and American literature. Students should consult the honors advisor before registering for this course.

UPPER DIVISION/GRADUATE LEVEL

Students enrolled at the 5000 level may expect additional work and evaluation commensurate with graduate standards.

ENGL 4050/5050-3. English Grammar. This course examines traditional grammar as well as some more recent developments: constituent grammar, transformational grammar, role relation grammar. Other subjects which will be studied include the rules governing language use and the grammar of dialects.

ENGL 4060/5060-3. Semantics. This course introduces the study of various linguistic approaches to written and oral communication. Its focus is on the various ways authors manipulate syntax and vocabulary to convey meaning.

ENGL 4080/5080-3. History of the English Language. This course examines how English has changed since 800 A.D. Examples of writing from different periods will be studied. Attention will be paid to the way various groups from Norman invaders to the most recent immigrants have enriched our vocabulary and altered our syntax.

ENGL 4160/5160-3. Poetics. This is an advanced poetics course for students of creative writing. Instruction is offered in the use of a variety of traditional and experimental forms.

ENGL 4171/5171-3. Language Theory. This course provides an introduction to linguistic theory for upper division undergraduates (4000 level) and for beginning graduate students who have not had such a course at the upper level. It covers material included in a lower level introductory course but takes it further, and also covers some areas not included at the lower level.

ENGL 4190/5190-3. Special Topics in Rhetoric and Writing. An examination of topics that focus on particular issues in rhetoric as they pertain both to writing (e.g., script writing, argumentative writing) and to the teaching of writing (e.g., great writing teachers, writing for teachers of writing).

ENGL 4200/5200-3. History of the English Novel. The rise and development of the English novel from its beginnings in the 18th century through World War I. Among the writers usually discussed are Defoe, Fielding, Austen, Dickens, and Hardy.

ENGL 4230/5230-3. The American Novel. This course concerns itself with such major developments in the American novel as the advent of realism, the novel of the frontier, the novel of the city, and other similar topics.

ENGL 4270/5270-3. History of American Literature I. This course will explore both the major and the minor works of American literature from the late 17th century to about 1865.

ENGL 4300/5300-3. History of British Drama. This course is intended as a survey of British drama from the miracle plays of the Medieval period, through the Renaissance and Restoration, to the "kitchens" realists of the 1960s.

ENGL 4320/5320-3. History of Poetry in English. This course offers a study of the major schools and eras of English prosody, including the poetry of Great Britain and the United States, from the beginnings in the Medieval period to the present.

ENGL 4500/5500-3. Medieval Literature. This course introduces representative writers from the Norman Conquest to about 1550. Emphasis will be placed on the writing of Chaucer, Gawain and the Green Knight, Medieval drama, and Malory.

ENGL 4520/5520-3. English Renaissance. This course introduces some of the important writers in the major period of English literature (1500-1660). Special attention will be paid to the works of Sidney, Spenser, Shakespeare, Bacon, Jonson, Donne, Herbert, Milton.

ENGL 4540/5540-3. Restoration and the 18th Century. This course introduces some of the important writers of the Age of Reason. The emphasis will be on such figures as Bunyan, Dryden, Pope, Swift, Johnson, and Burke.

ENGL 4560/5560-3. English Romanticism. The major works of the chief English writers of the first part of the 19th century will be studied. The emphasis will be on such representative figures as Wordsworth, Coleridge, Hazlitt, Byron, Keats, and Shelley.

ENGL 4580/5580-3. The Victorian Age. This course examines the main currents of Victorian thought in prose and poetry from about 1830 to the end of the century. Such writers as Carlyle, Mill, Newman, Ruskin, Browning, Tennyson, and Swinburne will be read.

ENGL 4600/5600-3. Modern British and Irish Literature. This course surveys British and Irish literature from the beginning of the century up to about 1941. Among the writers usually studied are Joyce, Yeats, Eliot, Pound, Forster, and Lawrence.

ENGL 4790/5790-3. Ethnic and Women's Literature. Designed for junior and senior high school literature teachers and other students interested in ethnic/women writers, this course explores the literary contributions of writers from various ethnic groups. Course focus is on how these writers respond and excel in their respective cultures.

ENGL 4926/5926-3. Readings in American Literature. This course offers students the opportunity for concentrated study in areas of American literature not regularly offered.

GRADUATE LEVEL

ENGL 5000-3. Studies in Major Authors. This course offers intensive study of works of one major British or American author.

ENGL 5001 thru 5005-3. Special Topics. These courses offer intensive study of specialized topics in English and American literature and in rhetoric, applied
language, technical communication, and the teaching of writing.  

**ENGL 5010-3. Special Topics.** This course offers intensive study of specialized topics in English and American literature and in rhetoric, technical writing, and the teaching of writing.  

**ENGL 5093-3. Rhetoric and the Teaching of Writing.** This course deals with the analysis of rhetorical theory with an emphasis on practical applications in the classroom. Attention will be paid to alternative pedagogies and the evaluation of teaching.  

**ENGL 5270-3. History of American Literature I.** This course will explore the major and the minor works of American literature from the late 17th century to about 1865.  

**ENGL 5280-3. History of American Literature II.**  

**ENGL 5350-3. American Drama.**  

**ENGL 5400-3. Old English I.** This course offers instruction in the Old English language.  

**ENGL 5405-3. Technical Communication: Writing.**  

**ENGL 5410-3. Old English II: Beowulf.** This course offers additional training in the reading of Old English and intensive reading of Beowulf.  

**ENGL 5510-1-3. Tutorials in American and British Studies.**  

**ENGL 5530-3. Milton.** This course offers extensive reading in John Milton’s poetry (Lycidas, Paradise Lost, Paradise Regained, Samson Agonistes) as well as in his political, social, and theological writings.  

**ENGL 5605-3. Rhetorical Theory for Technical Communication.**  

**ENGL 5730-3. Chaucer.** This course introduces students to the study of some of Chaucer’s major works. A reading knowledge of Middle English is assumed. Special attention will be paid to Troilus and Criseyde and the Canterbury Tales.  

**ENGL 5840-1 to 3. Independent Study.**  

**ENGL 5913-3. Practicum in Language and Rhetoric.** Supervised work in applied language or rhetoric and the teaching of writing.  

**ENGL 5920-3 to 6. Directed Reading.** This course offers graduate students instruction on an individual basis.  

**ENGL 5939-1 to 6. Cooperative Education.**  

**ENGL 6001-3. Critical Theory.** This class provides an historical survey of literary theory from Plato to the present with a pronounced emphasis on twentieth-century modes of interpretation. Prereq: ENGL 5100.  

**ENGL 6010-6019. Studies in Major Authors.** See ENGL 6000. ENGL 6010-6019-3. Special topics. This course offers intensive study of specialized topics in English and American literature and in rhetoric, technical writing, and the teaching of writing.  

**ENGL 6183-3. Rhetorical Theory: Teaching Writing.** This course offers an examination of the principles and applications of rhetorical theory and its relationship to writing. Topics such as the following will be offered at regular intervals: rhetorical theory and the teaching of writing, and rhetorical theory and literary criticism.  

**ENGL 6450-3. Seminar in Applied Language Studies.** This overview of some basic issues and tools of applied language study looks at language as a cognitive system and as a sociopolitical system. It studies the data on which research claims are based and applies the tools of data collection and analysis in a group research study in some aspect of literacy. Prereq: language theory (ENGL 5000) or an introductory undergraduate/graduate linguistics course.  

**ENGL 6840-1 to 3. Independent Study.**  

**ENGL 6910-3. Practicum in Applied Language.** The practicum in applied language is an attachment to a language-using community during which the student observes, records and analyzes language in use. It is both required, and essential training, for the master’s in English applied language track. Prereq: 2 credit hours toward the master’s degree. Prereq or coreq: seminar in applied language.  

**ENGL 6950-3 to 6. Master’s Thesis.**  

**ENGL 6960-1 to 8. Master’s Project.**  

**ENGL 8990-1 to 20. Doctor’s Dissertation.** This course may be repeated to a maximum of 20 hours.  

**ENVIRONMENTAL SCIENCES, MASTER OF SCIENCE**  

**Director:** Willard R. Chappell  
**Office:** NC 3208  
**Telephone:** 556-4520  

The M.S. in Environmental Sciences degree is designed to provide students with training in engineering, natural/physical sciences, and socioeconomic analysis. The goals of the program are to: (1) enhance the interdisciplinary communication and analytical skills of the student, and (2) provide opportunities for more intensive training within a particular subject area. Students will receive instruction in the physical and biological dynamics of various ecosystems, environmental engineering, and socioeconomic issues associated with environmental analysis.  

Graduates of the Environmental Sciences program are involved in many different areas such as reviewing environmental impact statements, monitoring groundwater quality, and communicating with the public. Many students have found employment in federal agencies such as the U.S. Environmental Protection Agency.  

**Application Deadlines**  
Fall ................ April 1  
Spring ................ October 1  

All application materials must be in by these deadlines.  

**Requirements for Admission**  

The program is primarily designed for students with baccalaureate degrees in engineering or one of the natural/physical sciences. Of the three option areas in the M.S.E.S. program, only the socio/economic option area does not require an undergraduate degree in engineering or science. However, even for this option area, a strong background in science and math is required. The minimum undergraduate science and math requirements for the socio/economic option area: two semesters of calculus (or one semester of calculus and one upper division statistics course), two semesters general chemistry with lab, one semester physics, and one semester general biology that includes ecology as a topic or one semester of upper division principles of ecology. If only two semesters of prerequisite courses are lacking, the student may be admitted, but must take them in his/her first year in the M.S.E.S. program. Applicants may be required to take additional prerequisite courses (necessary for completing particular core or elective courses). The prerequisite course will not count toward the M.S.E.S. degree. As part of the admission review process, applicants are required to submit a minimum of three letters of recommendation and transcripts from all institutions previously attended. The University of Colorado at Denver has a minimum requirement of 2.75 undergraduate grade point average (GPA) for applicants to the Graduate School. Graduate Record Examination test scores are not required unless the undergraduate GPA is 2.75 or less and the student hopes for a provisional status acceptance. However, since the number of applicants admitted to the M.S.E.S. program in any semester depends, in part, on space availability, the program is very competitive. Applicants are encouraged to submit their materials in advance of the Graduate School admissions deadlines.
Program Requirements

The M.S.E.S. is a 36-hour program. The curriculum consists of three components: (1) a set of core courses required of all students (15 hours); (2) elective courses taken in the three option areas (18 hours minimum); and (3) a research project and report (3 or 6 hours). At least 21 of the 36 credit hours required for the degree must be at the 5000 level or above. Program flexibility is provided through the selection of elective courses in various subject areas. Details concerning specific course requirements can be obtained upon request.

To fulfill the elective requirements, students select one of the following option areas. Each option area includes courses from at least two of the three subject areas (engineering, natural/physical sciences, socioeconomic sciences).

Engineering Option: 12 hours of engineering and either 3 hours of natural/physical sciences and 3 hours of socioeconomic science or 6 hours of natural physical sciences.

Natural/Physical Sciences Option: 12 hours of natural/physical sciences and either 3 hours of engineering and 3 hours of socioeconomic science or 6 hours of engineering.

Socioeconomic Science Option: 12 hours of socioeconomic sciences and either 3 hours of engineering and 3 hours of natural/physical sciences or 6 hours of engineering.

The degree is offered through the College of Liberal Arts and Sciences with the cooperation of the College of Engineering and Applied Science. Courses offered by the School of Architecture and Planning and the Graduate School of Public Affairs also may be relevant and applicable to the program.

Core Courses

The core courses required of all students include the following:

Natural/Physical Sciences (one Biology and one Chemistry course)

BIOL 5247-4 Environmental Physiology

or

BIOL 5154-3 Environmental Ecology

or

BIOL 5414-4 Mountain Ecology

or

CHEM 3111-3 Analytical Chemistry – & 3118-1 Lecture and Lab

or

CHEM 4121-3 Instrumental Analysis

or

ENVS 5000-3, Biophysicochemical Cycles (formerly PHYS 5000-3), will satisfy either the biology or chemistry core course requirement.

Engineering (2 courses)

CE 4494-3 Introduction to Environmental Pollution

and

CE 5504-3 Public Health Engineering

Socioeconomic Sciences (one course)

ECON 4530-3 Economics of Natural Resources

or

ECON 5540-3 Environmental Economics

or

URP 6653-3 (cross-listed as GEOG 5260) (Natural Resources Planning and Management)

On occasion, other courses may be offered which satisfy these core requirements.

A full list of recommended general and interdisciplinary courses in the Environmental Sciences may be obtained from the program office.

Courses

ENVS 5000-3, Biophysicochemical Cycles (BPC Cycles). Topics include an introduction to ecosystem structures and functions of the biosphere with a focus on the hydrologic cycle and the cycles of sulfur, nitrogen, and carbon. This course will satisfy either the Biol. or Chem. core requirement for the M.S. in Environmental Sciences. Prerequisite: Bachelor's in a Science field.

ENVS 5500-3, Topics in Environmental Sciences. Topics may vary from one offering to the next.

ENVS 5600-3, Applied Statistics for the Natural Sciences. A survey of statistical techniques for graduates. Course covers: quick review of basic statistics, tests for normality and outliers, display of data; simple and multiple regression; ANOVA and its relation to regression; factor analysis and database statistical analysis project. Emphasis on computer/stat-pak analysis and interpretation of statistical results. Prerequisite: graduate standing in CLAS or College of Engineering.


ETHNIC STUDIES

Director: Cecil E. Glenn

Telephone: 556-2700

Faculty: Associate Professor: Cecil E. Glenn

Undergraduate

Ethnic studies is the academic investigation of the four major minority groups in the U.S. The interdisciplinary nature of the ethnic studies curriculum program provides students the opportunity to develop a greater understanding of cultural pluralism and to acquire skills needed in professional and social service fields. The program offers a minor in Ethnic Studies.

Requirements for the Minor: The Ethnic studies minor is designed to help students majoring in the liberal arts and sciences develop a sophisticated and broad understanding of ethnicity and its role in contemporary American society. The program features an interdisciplinary curriculum that analyzes the ethnic experience from the perspectives of the various social sciences and humanities. Further, it provides students with the theories, concepts, and generalizations needed to comprehend and interpret relations between and among ethnic groups in the U.S.

The minor in ethnic studies offers students the opportunity to enhance and broaden the body of knowledge acquired in their chosen majors, and to apply it in a variety of careers involving intercultural relations. A student who wishes to minor in ethnic studies is required to complete 21 semester hours in Ethnic Studies with a grade of C or better. These hours are to be taken with CU-Denver faculty (any exception needs to be approved by the Ethnic Studies advisor). At least three of the required 21 hours must be in courses numbered 3000 or above. Courses taken to fulfill the student's major requirements may not be applied toward the requirements for the minor in Ethnic Studies.

The 21 hours required must be distributed as follows: 3 hours in social perspective courses, 3 hours in cross-cultural perspective courses, 12 hours in ethnic perspective courses and ETST 4944, Cross Cultural Psychology. Interested students should obtain a list of these courses from the Ethnic Studies advisor.

Courses


ETST 2034-3, Behavior, Alienation and Ethnicity. An introduction to the field of ethnic studies, covering some of the most recent theories about the origin of human kind, its dispersion, and some reasons for
the differences and similarities among people from different regions of the world, including the United States.

ETST 2794-3. Survey of Ethnographic Literature. (ENGL 2794.) A survey of the cultural perspective of various ethnic writers and their contributions to American literature.

ETST 3034-3. Race, Gender, Law, and Public Policy. (PSC 3034.) Historical overview of race and gender relations in the U.S. and an examination of the treatment of race and gender issues in the judicial system and in public policy.

ETST 3204-3. Law and Minorities I. Designed to acquaint students with the legal system of American society; includes contracts, buying and selling, wills and inheritance, debtors and creditors, landlord and tenant, family relations, criminal law and civil rights.

ETST 3254-3. Pathology of the Ghetto I. This dynamic course combines aspects of urban studies and sociology. Contemporary cultural factors of the minority ghetto experience will be investigated as elements in urban crisis. Emphasis is placed on possible solutions through government agencies and community organization.

ETST 3264-3. Intervention in Dysfunctional Communities. Formerly called pathology of the ghettos, this is a course designed to critically study those agencies and various community organizations whose main purpose is to rectify various community ills found in dysfunctional communities (slums, ghettos). Students will be expected to do research and make presentations on the solution involving a research topic which focuses on ghettos. Students taking this class are required to be sophomores or above.

ETST 3274-3. Culture of Poverty. A study of membership in groups that have been poor for generations and the creation of a separate culture. This course studies Blacks, whites, Mexican Americans, and other ethnic groups that have lived in this society in a state of poverty.

ETST 3284-3. Feminization of Poverty. A critical study of issues contributing to the state of poverty among women: unequal pay; employment opportunities; and institutionalized injustices. Particular emphasis will be focused on social and legal statistics that highlight the growing national shame of women of all races. Prereq: sophomore and above standing.

ETST 3394-3. Literature of Social Protest from an Ethnic Perspective. The literature of social protest of various ethnic groups, examined from a literary perspective and with reference to political and social theories.

ETST 3454-3. Due Process and the Socially Disadvantaged. Structured in layperson's terms, this innovative course presents current information on occupational litigation, legal rights, due process, the future of affirmative action, and techniques of operational procedure in these areas.

ETST 3504-3. Prejudice, Stereotyping, and American Society. An examination of prejudice and stereotyping in American society, with particular emphasis on institutions; how institutions harbor and reinforce racial and ethnic stereotyping and its impact on equal opportunity for racial and ethnic minority groups and women.

ETST 3554-3. Minority Politics. (PSC 3554.) An examination of the social, cultural, and economic factors that affect the political choices of ethnic minorities in the United States. Analysis of minority political action.

ETST 3704-3. Culture, Racism, and Alienation. The effects of racism on the personality of participants in racist cultures.

ETST 3794-3. Survey of Ethnographic Literature. (ENGL 3794.)

ETST 4054-3. Intergroup Relations. A study of intergroup (race) relations at the small group level. Includes analysis of a group that has been stratified into a majority of white students and a fixed number of minority students.

ETST 4124-3. Civil Rights. Designed to introduce the student to the field of civil rights and equal employment opportunities. Emphasis on fair employment practices and procedures. Field visits.

ETST 4494-3. Cross Cultural Psychology. (Same as PST 4495.) The influence of culture and subculture on personality, including sex roles, patterns of child rearing, attitudes and values, and mental illness. Prerequisite: six semester hours of courses in psychology, sociology, and/or anthropology in any combination.

ETST 4814-3. Language and Culture. This course aims at developing insights into the relationship between verbal behavior and social organization. It draws upon linguistics, anthropology and psychology to answer such questions as what is language? How did it originate and evolve? Why does language vary across cultural groups and social classes?

AFRO-AMERICAN STUDIES

ETST 1105-3. Black Contemporary Social Issues. Designed to expose the student to those areas of intellectual, social, cultural, economic, political, and educational concerns relevant to the African-American experience. Principally an introductory survey of primary issues currently affecting the Black population.


ETST 2165-3. Afro-American History II. (HIST 2390.) Continuation of ETST 2155.


ETST 2745-3. The American Writer and the Black Man I. Close reading and analysis of significant literary works by Black Americans: novels, poems, plays, and essays.

ETST 2755-3. The American Writer and the Black Man II. Continuation of ETST 2745 but may be taken independently of that course.


ETST 3935-1 to 3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prerequisite: junior standing and 2.75 grade-point average.


ETST 4515-3. Black Politics. (PSC 4514.) Examination of Black politics in the U.S.; the role of Black interest groups, structure and function of Black political organizations, goals and political styles of Black politicians, trends and future of Black politics in the United States.

AMERICAN INDIAN STUDIES

ETST 2496-3. Native American Literature. An introduction to native American literature and other expressive forms with emphasis on their aesthetic, linguistic, psychological, and historical properties, as well as the contemporary social and
cultural influences upon native authors and their material.
ETST 2606-3. The American Indian Experience. Survey of the relationships between Indian and non-Indian peoples, particularly in the context of the unique interaction between tribes and the federal government.
ETST 3216-3. The American Indian and Federal Law. A survey of the special status of American Indians, as well as the problems, costs, and benefits affecting various tribal groups and individuals as exemplified in a selection of actual case studies.
ETST 3606-3. The Myths and Legends of America. An exploration of the spectrum of the myths and legends of native America which focuses on the relationship between the collective myth and the individual.
ETST 3616-3. Selected Topics: Native Americans. Examines specific topics on native Americans to be selected by the instructor and students. Detailed study of subjects related to native American experience and communities.
ETST 3836-3. Seminar: American Indian Experience and Communities. An introductory course in which the course will look at the experience of men and women in different generations and examine how each group attempted to maintain traditional values in a foreign land, how it attempted to assimilate, and how it forged a new identity. Readings include short stories, poetry, essays, and novels by leading Asian American writers.
ETST 3417-3. Psychology of the Asian in America. (PSY 3415.) An introduction, combining lecture and discussion, of the psychological perspective of being an Asian in America. Deals directly with aspects of mental health, problems and approaches for the Asian-American. Some field experience will be included. Prereq: 3 hours of psychology.
ETST 3567-3. Asian Pacific Women in American Society: Dolls or Dragons? The course will examine processes of change in values, roles, and relations for Asian-American/Pacific Islander women, using contemporary and historical readings that address problems such as generational differences, assimilation, and changing roles.
ETST 3939-1 to 3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: junior standing and 2.75 grade-point average.
HISPANIC AMERICAN STUDIES
ETST 1278-3. Contemporary Mexican American I. An introductory course in which the basic terminology of the Chicano milieu is defined and a survey made of the Chicano movement from its early manifestations to the present.
ETST 2118-3. Contemporary Mexican Literature in Translation. Mexican literature since World War I has been in the forefront of literary innovations, directly reflecting the rapid progress and changes in society. The purpose of the course is literary but serves also to dispel many false views of Mexico as a rural, traditionally conservative country.
ETST 2128-3. Contemporary Latin American Literature in Translation. The approach is the same as in ETST 2118.

The best of contemporary Latin American authors are studied: Borges, Fuentes, Rulfo, Carpentier, Cortazar, and others.
ETST 2138-3. History of Chicano Art. A survey of art, indigenous as well as that with Spanish and Mexican influence. The focus on the Mexican American includes the fields of painting, sculpture, and architecture.
ETST 3038-3. History of the Spanish Language in the Southwest. The Spanish of the Southwest is compared with that spoken in other areas of the world. The course is the first and most basic in the linguistic series in the Spanish discipline. Basic linguistic terminology is introduced and applied in the analysis of Southwest Spanish. Prereq: SPAN 2120 or equivalent.
ETST 3048-3. Workshop in Southwest Spanish. A research-oriented workshop designed to conduct an in-depth analysis of Southwest Spanish through field study. Basic fundamentals of field research will be introduced. Prereq: ETST 3038 or consent of instructor.
ETST 3108-3. Mexican American Ethnic Relations. An interesting and innovative mix of anthropology, history, and sociology. Persons of Spanish, Spanish-Indian, and Mexican descent will be studied. Areas of focus will include ethnological backgrounds, current interrelations, and social movements in both rural and urban groups. Other topics: cultural patterns, identity maintenance, and social forms and problems of national incorporation.
ETST 3408-3. Social Psychology and the Mexican American. Exposes students to the research on Mexican Americans in the fields of intelligence and achievement, language and learning ability, attitudes, perception, personality, and motivation.
ETST 3538-3. History of the Mexican American in Colorado. Research-oriented seminar course in which the student is expected to gather material on the subject from original sources.
ETST 3939-1 to 3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: junior standing and 2.75 grade-point average.
ETST 4328-3. Education in Multilingual Communities. Sociolinguistic approach to education in multilingual communities in the United States Southwest. Topics considered will include historical and contemporary trends in schools' language policies and practices; intraschool social and academic stratification.

ETST 4558-3. The Mexican American in Politics. (PSC 4554.) Analysis of the social, cultural, and economic factors which affect political behavior of Mexican Americans. Special attention will be paid to the Mexican American cultural heritage and to relations between Mexican Americans and Anglo Americans.

ETST 4598-3. The Mexican American in the Southwest. A study of the development of the social structures of Mexican Americans in the Southwest and the forces that have affected them.

ETST 4768-3. Contemporary Chicano Literature. (ENGL 4660.) A summary of modern Chicano authors. This course acquaints the student with the motifs and currents of the Chicano movement, whose literature is in the vanguard of American letters.

INDEPENDENT STUDY
ETST 2840-1 to 3. Independent Study.
ETST 3840-1 to 3. Independent Study.
ETST 4768-3. Independent Study.

FINE ARTS
(See School of the Arts in the College of Liberal Arts and Sciences section of this catalog.)

GEOGRAPHY
Chair. Geography, Geology, and Physics:
Martin M. Maltz
Faculty Advisor: Richard E. Stevens
Office: NC 3528
Telephone: 556-3456
Faculty: Professors: Richard E. Stevens
Assistant Professors: Frederick Chambers
Geography Advisory Board:
Robert Alexander, Research
Geographer, USGS
Rhoda Blas, Associate,
HOH Associates, Inc.
Donald Cover, Director, Office of Transit Assistance, UMTA, Department of Transportation, Denver Regional Office

Undergraduate
Geography is a science that focuses on the spatial analysis of human/physical patterns and processes. Geographers attempt to identify the factors affecting the distribution of people and their activities on the surface of the earth and to provide meaningful solutions to problems faced by societies. This discipline is an ideal major for the liberal arts student, providing exposure to the concepts and techniques utilized in investigating environmental issues, socioeconomic problems, and planning policies.

The program is designed to provide the student interested in economic, physical, or social geography with the background necessary for obtaining a rewarding career in government (federal, state, local) or private industry, as well as preparing students for graduate work.

Requirements for the Major:
Students majoring in geography must complete the following basic courses or their equivalents, each with a grade of C or higher: GEOG 1302, 2232, 2242, 3062, and 3401 or 3411. In addition, majors must complete a minimum of 30 hours of course work in geography (at least 16 hours of which must be at the upper division level and at least 15 hours of which must be taken at CU-Denver) and maintain a 2.0 average in all geography course work completed.

Seniors must complete a one credit senior thesis on a topic which integrates and applies their working knowledge of geographic concepts and issues. Students should consult with a faculty member as early as possible in their final year for details. Students interested in planning as a career should concentrate their geography electives in those courses cross-listed with the urban and regional planning program in the School of Architecture and Planning. Work completed as an undergraduate will reduce the time needed to obtain a master's degree in planning. Distributed studies majors selecting geography as a primary or secondary subject should consult with the department advisor.

Requirements for the Minor:
Students interested in a minor in geography should contact a departmental advisor for information and specific requirements.

Graduate
All applicants for admission to the graduate program in geography are processed by the departmental office in Boulder and most course work must be completed on that campus. Graduate offerings on the Denver campus are minimal except for work in the general area of planning.

Requirements for Admission
For admission to the M.A. program, the student must have a bachelor's degree in geography or some allied field. Applicants with little or no training in geography may be required to take additional course work in areas deemed necessary for completing graduate work. The GRE verbal and quantitative examinations, or their equivalent for foreign students, are required of all applicants.

Degree Requirements
Two types of degree programs are available. Plan I requires a minimum of 18 credit hours of course work and 6 credit hours of thesis research and presentation work. Plan II requires a minimum of 30 credit hours of course work, including 4 to 6 independent student credit hours involving completion of a project or paper of publishable quality.

All incoming graduate students must complete two basic courses: GEOG 5152-3, History and Nature of Human Geography, and GEOG 5161-3, History and Nature of Physical Geography. A grade of less than B in either course may result in dismissal from the program or require remedial work in the area of deficiency. These two courses are offered on the Boulder campus only. Much of the graduate work available on the Denver campus consists of courses cross-listed with other departments and schools and taught by faculty in those units, notably the School of Architecture and Planning.

For further information call the geography department, 556-3456.

Courses
GEOG 1102-3. World Regional Geography. An analysis of the relationships of humans and the landscape based on geographic distributions in the world.

GEOG 1302-3. Introduction to Human Geography. Systematic introduction to basic concepts and approaches in human geographic analysis.

GEOG 1332-1. Topics in Science. A series of five-week modules on various topics in physical geography.

Section 001. Violent Storms. An analysis of the causes, characteristics, and regional patterns of thunderstorms, tornados, and hurricanes emphasizing the hazards associated with each type of storm.

Section 002. Elementary Surveying. An introduction to the various techniques of running a traverse, location of points by intersection and resection, determination of distance by pacing, chaining, stadia, and trigonometry, and carrying of elevations.

Section 003. Basic Navigation. An introduction to the principles of navigation using
the sun as the celestial body. Emphasis is on determining latitude and longitude at solar noon.

**Section 004. Earthquakes.** The characteristics, causes, and results of earth movements along faults.

**Section 005. Waves and Beaches.** An analysis of wind-generated waves in the open ocean and the changes that occur as waves enter shallow water, forming surf. The tides and seismic sea waves are discussed for comparison.

**Section 006. Rivers and Flood Plains.** An introduction to the nature of stream channels and stream landscapes with emphasis on the problems associated with human occupation of such landscapes.

**Section 007. World Food and Hunger.** An analysis of the world food problem with emphasis on the nutritional characteristics of major foods, the physical factors affecting food production, and the potential of the world's land for producing food.

**Section 008. Volcanoes.** Why do volcanoes erupt and what flow? How do they occur where they do? How do they affect the environment and people? We will discuss these aspects and other characteristics of volcanoes in this course.

**GEOG 2202-3. Natural Hazards.** A survey of those physical phenomena that cause substantial damage when they occur in areas of human settlement.

**GEOG 2232-4. Climate and Humans.** A general introduction to elements of weather, physical climatology, and world regional climate classification.

**GEOG 2242-4. Landforms.** (GEOG 2017.) Study of earth materials, features, and processes, and how they relate to humans.

**GEOG 2612-3. World Cities.** An introduction to major world urban trends, and comparative investigation of similarities and differences among specific cities around the world. The course includes a review of economic growth forces, transportation characteristics, land use patterns, housing issues, and government policy.

**GEOG 2990-3. Special Topics.** Introduction to current topics and issues in geography such as patterns of world cities, environmental management and similar issues of interest to non-majors.

**GEOG 3062-3. Map Reading and Elementary Surveying.** Introduction to the analysis and use of maps, and to elementary field techniques as research tools. Two all-day field projects.

**GEOG 3080-3. Introduction to Cartography.** Study of major elements in the preparation of thematic maps including sources of data, collection and manipulation of data, and cartographic techniques for display of data.

**GEOG 3100-3. Geography of Colorado.** An analysis of the physical environment, history of settlement, and resource base of Colorado in relation to present economic patterns of the state.

**GEOG 3130-3. Central America and the Caribbean.** A survey of the physical environment and cultural development of Central America and the Caribbean Islands.

**GEOG 3150-3. Middle East.** A physical, cultural, and economic approach to the arid lands of the Middle East including Arab lands of the Sahara.

**GEOG 3160-3. China.** Geographic survey of the physical, cultural, and economic features characterizing the geography of China.

**GEOG 3170-3. Africa.** A physical, cultural, and economic approach to an understanding of human/land relationships in sub-Saharan Africa.

**GEOG 3401-3. Agriculture and Food.** An introduction to rural land use patterns and agricultural production, and world food problems.


**GEOG 3939-1 to 3. Internship/Coeoperative Education.** Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: junior standing and 2.00 grade-point average.

**GEOG 3990-3. Special Topics.** Investigations of current topics in geography such as analysis of issues (crime, public transportation), techniques (socioeconomic impact analysis), or areas of specialization (climatology). Prerequisites will vary with each topic, but will be no less than six hours in relevant social or physical science.

**GEOG 4240-3. Principles of Geomorphology.** (GEOG 4630.) Systematic study of rock structures, weathering, mass wasting, fluvial, wind, glacial, and shoreline processes, and the landforms they produce. Prereq: introductory college level geology or physical geography, or consent of instructor.

**UPPER DIVISION/GRADUATE LEVEL**

Students enrolled at the 5000 level may expect additional work and evaluation commensurate with graduate standards.

**GEOG 4000/5000-3. Quantitative Techniques.** (URP 5510.) The application of statistical, quantitative, and mathematical techniques to various analysis problems.

**GEOG 4060/5060-3. Air Photo Analysis.** (GEOG 4060.) An in-depth treatment of the use of aerial photographs for the analysis of urban-industrial patterns, vegetation, agriculture, landforms, and geologic structure. Prereq: GEOG 3062 or consent of instructor.

**GEOG 4080/5080-3. Geographic Information Systems.** (URP 5530.) An introduction to various aspects of geographic information systems including justification, definition of hardware/software, data base design, and data conversion. A geographic information system is a computer-based mapping system providing a graphical interface to locational and relational attribute data on facilities and land. Hands-on use of a geographic information system workstation is an integral part of the course.

**GEOG 4220/5220-3. Environmental Impact Assessment.** (URP 6651.) An introduction to the environmental impact statement (EIS) process, its legal context, and the criteria and methods for procedural and substantive compliance. Students will develop skills appropriate to the preparation of environmental impact statements and will become aware of issues fostering innovation and change.

**GEOG 4260/5260-3. Natural Resource Planning and Management.** (URP 6653.) An introduction to problems or resource preservation with special attention given to property rights and market failure, and their impacts on resource use. Planning and policy implications in reference to the optimal use of non-renewable, and the management and preservation of renewable resources, will be emphasized as will be conflicts between growth and environmental quality.

**GEOG 4400/5400-3. Regional Economic Development.** (URP 6671.) An examination of the process of economic development planning by the use of community economic development methodologies as the basis for creating regional development strategies.

**GEOG 4600/5600-3. Historical Development of Urban Form.** (URP 5532.) A description, analysis, and evaluation of the physical form of cities, from their beginnings to the present. Emphasis is on the physical planning of cities and regions in order to integrate, broaden, and challenge existing thought about cities.

**GEOG 4610/5610-3. Geography of Cities.** (URP 5520.) Detailed analysis of research efforts concerning the origin, economic growth processes, distribution, and functions of urban areas.

**GEOG 4620/5620-3. Urbanization in Developing Countries.** (URP 6680.) An overview and evaluation of urbanization and planning in the world's less developed
countries for the purpose of understanding the complex cities of non-Western nations.

**GEOG 4630/5630-3. Geography of Transportation.** (URP 6673.) Consideration of advanced concepts and theories leading to description and understanding of the relationships between people, products, and transportation systems over space and time.

**GEOG 4650/5650-3. Location Analysis.** The study of commercial and industrial activities, emphasizing theories of locational structure and methods of analysis.

**GEOG 4670/5670-3. Urban Transportation Planning.** (URP 6674.) A continuation of GEOG 4630; geography of transportation, involving an examination of major issues of urban transportation in the United States. Included are the role of transportation in urban development, the urban transportation system, relationship between land use planning and transportation planning, urban transportation planning processes, and selected case studies.

**GEOG 4990-3. Special Topics.**

**GRADUATE LEVEL**

**GEOG 5920-1 to 3. Readings in Geography.**

**GEOG 5939-1 to 6. Cooperative Education.**

**GEOG 6000-3. Advanced Quantitative Methods in Geography.** (URP 5511.) Continuation of GEOG 4000 with emphasis on more advanced mathematical and statistical techniques in geography and related fields. Prereq: GEOG 4000 or consent of instructor.

**GEOG 6950-6. Master's Thesis.**

**GEOG 8990-1 to 8. Doctor's Thesis.**

**INDEPENDENT STUDY**

**GEOG 4840-1 to 3. Independent Study.** (Undergraduate). Independent research primarily for undergraduate majors. Prereq: consent of department.

**GEOG 5840-1 to 3. Independent Study.** (Graduate). Section 1, economic; 2, physical; 3, urban; 4, social; 5, quantitative; 6, transportation.

**GEOG 6840-1 to 3. Independent Study.** (Graduate). Independent research for graduate major students. Prereq: consent of department.

**GEOG 8990-1 to 8. Doctor's Thesis.**

**ADJUNCT FACULTY**

**Adjoint Faculty:** Richard Stevens

**Adjunct Faculty:** James Juhn

**Research Associates:** Ed Erlich, Farley Fleming

Geology is the study of the earth. The major topics in the field include (1) the origin and distribution of rocks and minerals, and their economic and scientific importance, (2) the processes within the earth that create continents and ocean basins, (3) the processes that act at the surface of the earth to produce hills and valleys and other landforms, and (4) the history and evolution of the earth and its living organisms. Most of these topics are subject of both scientific study and applied technology.

**Undergraduate**

The Department of Geology offers a B.A. degree program that includes a full range of courses in the fundamentals of geology, taught mainly by the full-time faculty, plus a variety of applied and topical courses taught by experts from industry. The program is enhanced by the strong industry presence in downtown Denver, and by our proximity to the Rocky Mountains. Environmental agencies, engineering geology, petroleum and mining firms, state and federal geological surveys provide employment for many of our students. The foothills of the Rocky Mountains provide a superb setting for geological field trips. Careers in geology normally require a master's degree, but a Ph.D. is required for research positions and university teaching. Many other career paths are available by combining a B.A. in geology with a degree in law, business, education, engineering, or another science. The departmental requirements for a B.A. in geology are designed to prepare students for graduate school and a professional career.

**Requirements for the Major.** Students majoring in geology may choose from among six curriculum options to suit a variety of career and educational objectives. Most options require students to take physical geology (I and II), mineralogy, petrology, paleontology, sedimentation/stratigraphy, structural geology, and field geology. Each option, however, requires a different combination of mathematics and allied science courses (physics, chemistry, and biology), and one option, with minimal mathematics and allied science requirements, is designed for students who wish to combine geology with another professional field such as law, business, or education. All courses required for the geology major must be taken for a letter grade (no pass/fail). Required upper division courses must all be grade C or better. Transfer students must take a minimum of 14 hours of the required upper division geology credits at CU-Denver. All geology majors are required to take the Graduate Record Examination (GRE) subject test in geology prior to graduation, to comply with the Colorado Commission on Higher Education mandate for comprehensive senior level assessment. The results of the GRE must be received by the CU-Denver Geology Department no less than two months before the intended date of graduation to assure timely certification of completion of major requirements.

**Requirements for the Minor.** Students interested in a minor in geology must take GEOG 1072-1082; plus at least two of the following CU-Denver courses: GEOG 3011, 3121, 3231, 3411, 3421. All required courses must be taken for a letter grade. No grade below C will be counted toward these requirements. Transfer students who have completed the equivalent of all these courses elsewhere must complete a minimum of two upper division courses at CU-Denver.

**Graduate**

In addition to its B.A. program, the Department of Geology participates in the M.B.S. (Master of Basic Science) and M.S.E.S. (Master of Science in Environmental Science) programs on the Denver campus, and in the M.S. and Ph.D. geology programs on the Boulder campus. Students with an interest in geology are invited to seek academic and career counseling with a faculty advisor. More information is available through the geology department, NC 3528, 556-3456.

**Courses**

**GEOG 1022-3. History of Life.** A nontechnical study of life forms and their relationships to environments through earth history. Includes discussion of major evolutionary events and current controversies. Recommended for CLAS science requirement.

**GEOG 1072-3. Physical Geology: Surface Processes.** An introductory course in physical geology. This course covers surface processes and landforms, and includes three all-day field trips. Partially fulfills the CU-Denver undergraduate core curriculum in natural and physical sciences, and partially fulfills the CLAS core curriculum science requirements. Required for geology majors.

**GEOG 1082-3. Physical Geology: Internal Processes.** An introductory course in
physical geology. This course covers internal processes and properties of the earth's interior with plate tectonics as the underlying theme. It includes three all-day field trips. Partially fulfills the CU-Denver undergraduate core curriculum in natural and physical sciences, and partially fulfills the CLAS core curriculum science requirements. Required for geology majors.

**GEOL 1102/3102-3. Dinosaurs Past and Present.** A broad-based, non-technical new look at the world's most popular prehistoric animals. The course will stress the rapid and perennial growth of knowledge about dinosaurs and the relevance of such knowledge in the 20th century. Prereq: introductory geology and/or biology recommended.

**GEOL 1202-3. Introduction to Oceanography.** A survey of modern scientific knowledge of the world's oceans. Intended for non-science students, the course offers a non-quantitative introduction to the major facts and principles of physical, chemical, biological, and geological oceanography. Recommended for CLAS science requirement.

**GEOL 1302-3. Introduction to Astrogeology.** A survey of the geology of the planets and their environments in space. Intended for non-majors, the course provides an introduction to the geological origin, evolution, structure, and geomorphology of the planets. Recommended for CLAS science requirement.

**GEOL 1332-1. Volcanoes.** A nontechnical survey of volcanoes including their geological and geographic locations, origins, history, behavior, hazards, prediction, and human impact.

**GEOL 1402-3. Introduction to the Ice Ages.** A survey of the natural history of earth's ice ages, the processes that lead to paleoclimatic change, environmental changes, and the effects on the geological earth. Included are topics in ocean-atmosphere influences, glaciers, glacial geology, influences on world flora and fauna, extinction of pleistocene mammal populations, and the emergence of hominids.

**GEOL 3011-4. Mineralogy.** Principles of mineralogy, including crystallography, crystal chemistry, and a systematic study of the more important nonsilicate and silicate minerals. Origins and occurrences of minerals. Prereq: physical geology and college level chemistry, or consent of instructor.

**GEOL 3030-3. Geologic Map Analysis.** An introductory course in interpretation and construction of geologic maps and cross sections. This lab- and field-oriented course is designed to focus on classical geometric relationships, analysis of geologic maps, and field mapping techniques. Prereq: GEOL 2072 and 2082 or equivalent.

**GEOL 3121-5. Structural Geology.** Descriptive and interpretive study of the deformation structures found in sedimentary, metamorphic, and igneous rocks (i.e., folds, faults, foliation, etc.). Includes an introduction to field and laboratory studies of geologic structures, techniques of geometric analysis, and the tectonic significance of structures.

**GEOL 3130-3. Global Climate Change.** This course deals with the history and evolution of climatic change, with emphasis upon the greenhouse effect, human impact on climatic change, and the potential consequences of such change. Included are topics on acid rain, ozone, aerosols, deforestation, and desertification.

**GEOL 3200-3. Palaeoclimatology.** (GEOG 3200.) A descriptive and theoretical study of ancient climates on earth, and the techniques used to reveal and reconstruct ancient climates. Topics include the origin and evolution of planetary atmospheres, paleoclimatic modeling, and climatic impact on living systems, with emphasis on glacial climates in the geologic past. Prereq: GEOL 1072 or GEOG 2232.

**GEOL 3231-4. Introductory Petrology.** An introduction to classification, distribution, and origin of igneous, metamorphic, and sedimentary rocks, including their identification in hand specimens. Prereq: physical geology and mineralogy.

**GEOL 3300-3. Tracking Dinosaurs.** An introduction to the science of dinosaur tracking with emphasis on how fossil footprints reveal insights into the behavior of extinct animals and the habitats in which they lived. Prereq: high school or college biology and/or geology recommended.

**GEOL 3411-4. Introductory Paleontology.** The study of invertebrate fossils, including a survey of the organic world and its history in the geological past. Includes biometrics and an introduction to evolution and paleoecology, and discussion of the uses of fossils in geologic correlations. Prereq: introductory geology or biology.

**GEOL 3421-4. Sedimentation and Stratigraphy.** An introduction to the principles of sedimentology and stratigraphy. Emphasis will be on dynamic processes within modern environments and the resulting stratigraphic record. Prereq: physical geology II, or the equivalent.

**GEOL 3939-1 to 3. Internship/Cooperative Education.** Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: junior standing and 2.75 grade-point average.

**GEOL 4060-3. Air Photo Analysis.** (GEOG 4060.) Use of aerial photographs for the analysis of urban-industrial patterns, vegetation, agriculture, landforms, and geologic structure. Prereq: GEOG 3062 or consent of instructor.

**GEOL 4120-3. Soil Chemistry of Hazardous Materials.** This course is designed to relate the physical, chemical, and biological properties of soils and surficial deposits to problems of environmental contamination. Such topics as hazardous and toxic waste, acid rain, acid-mine drainage, bioavailability of metals and reclamation are covered. Prereq: one year of inorganic chemistry.

**GEOL 4400-3. Groundwater.** Occurrence, movement, and problems of pollution of subsurface water and the hydrologic properties of waterbearing materials. Prereq: one year college geology or consent of instructor; calculus recommended.

**GEOL 4440-3. Glacial Geology and Climatology.** A descriptive and theoretical study of the characteristics of glacial and glacial age features, processes and climatology. Topics include glacial geologic features, ice sheets, polar exploration, geochronology, glacial stratigraphy, geopolarity epochs, glacial isostasy, eustatic change, atmospheric structure and circulation in the ice ages, paleoclimatology, paleolithic, and holocene. Prereq: GEOL 1072 and 1082.

**GEOL 4500-3. Topics in Geology.** Topics may vary from one offering to the next. Prereq: vary with the topic.

**GEOL 4630-3. Principles of Geomorphology.** (GEOG 4630.) Systematic study of rock structures, weathering, mass wasting, fluvial, wind, and shoreline processes, and the landforms they produce. Prereq: introductory college level geology or physical geography, or consent of instructor.

**GEOL 4840-1 to 3. Independent Study.** (Undergraduate).

**GEOL 4942-3. Mineral Resources in World Affairs.** Non-technical study of the distribution, uses, and conservation of economic minerals and fuels. Topics to be discussed include the role of the Middle East in the present and future supply of fossil fuels; the potential of oil shale development in the U.S.; The potential of coal slurry pipelines; the future of nuclear power; alternate energy sources; acid rain; the potential for deep-sea mining of metallic deposits; mineral economics; the law of the sea; and the role of foreign governemnts in the mineral industry. Some special topics will be presented by industry and government experts.
UPPER DIVISION/GRADUATE LEVEL

Students enrolled at the 5000 level may expect additional work and evaluation commensurate with graduate standards.

GEOL 4090/5090-4. Well-Log Analysis. A senior/graduate level course introducing the theory behind well-logs and their uses in stratigraphic studies. Emphasis is on determining lithology, porosity, and attitude from logs and applying this information to geologic studies. Prereq: GEOL 1082, 3421 (G121 recommended), MATH 1120, and one year of college physics.

GEOL 4717/5717-1. Optical Mineralogy. A systematic study of the optical properties of minerals and their identification in thin section and grain mounts. Prereq: PHYS 2311 and 2321, GEOL 3011 or equivalent.

Intended for advanced undergraduate geology majors or first-year graduate students. A substantial laboratory project is required for graduate credit.

GEOL 4831/5831-4. Introduction to Geophysical Prospecting. Basic principles of geophysical prospecting for oil and other earth resources. Seismic, magnetic, gravity, electrical, and electromagnetic methods will be discussed. Basic college physics, mathematics, and geology required.

GEOL 4751/5751-4. Paleocological Facies Analysis. An introduction to basic and applied paleoecology through the study of relationships between fossil assemblages and sedimentary facies. Emphasis is on the understanding of faunal association and biofacies and the potential of paleoecological studies in the interpretation of depositional environments and biostratigraphy. Prereq: GEOL 3411, GEOL 3421 recommended.

GEOL 4770/5770-3. Statistics for Earth Sciences. Introduction to techniques of mathematical, quantitative, and statistical analysis, with emphasis on applications to earth science problems. Prereq: algebra and introductory calculus.

GEOL 4830/5830-4. Computer Applications in Geology. Principal uses of the computer in the analysis of geological data will be covered. Emphasis will be on learning to use some of the existing software commonly used by the oil industry and how to evaluate their utility. Applications to the types of geologic specialties will also be covered. Prereq: GEOL 3421 or 3121. Recommended MATH 3830 and some computer science.

GRADUATE LEVEL

GEOL 5500-3. Topics in Geology. Topics may vary from one offering to the next. Prereq: vary with the topic.

GEOL 5600-3. Seminar: Research and Writing in the Natural Sciences. This senior/graduate level course deals with the nature and importance of scientific research, and traditional means by which the results are conveyed in the scientific literature. Included also are topics related to master's degree theses, doctoral degree dissertations, and the funding of scientific research. Prereq: senior or graduate level standing, with a major in a physical or biological science.

GEOL 5610-3. Seminar: Geophysics. This senior/graduate level course deals with the major natural geophysical phenomena on earth and other planets, viz., seismology, gravity, geomagnetism, geothermal characteristics, telluric currents, and related phenomena. Both theoretical and the practical uses of geophysics are treated, i.e., geophysical research and exploration geophysics. Prereq: senior or graduate level standing, with a major in the natural sciences.

GEOL 5630-3. Principles of Geomorphology. Systematic study of rock structures, weathering, mass wasting, fluvial, wind, and shoreline processes, and the landforms they produce. Prereq: intro college level course in geology or physical geology or consent of instructor.


INDEPENDENT STUDY.

GEOL 4840-1 to 3. Independent Study. GEOL 6840-1 to 3. Independent Study.

HISTORY

Chair: Mark S. Foster
Office: NC 3002
Telephone: 556-4830
Faculty: Professors: Frederick S. Allen, Ernest Andrade, Jr., Mark S. Foster, Thomas J. Noel, James B. Wolf
Associate Professors: Myra S. Conroy, Myra L. Rich
Assistant Professor: Philip A. Hernandez
Adjunct: Ellen K. Fisher, G. Michael McCarthy

History Advisory Council:
Richard J. Ashton, City Librarian,
Denver Public Library
Mary Demis
Dana Crawford, Urban Neighborhoods, Inc.
Glenn Cuerden, Cuerden Advertising Co.
Senator Dennis Gallagher, Colorado Legislature
Cyndi Kahn, Attorney at Law
William H. McNichols, Jr., former Mayor,
City of Denver

Barbara Sudler, President, Colorado Historical Society
Kathleen Sutton, President, Historic Denver Inc.

Undergraduate

History constitutes an intellectual challenge not only because of its special responsibility, the search for reality in the past, but also because an understanding of history requires one to integrate many branches of knowledge. Perhaps more important to the history student than learning what has happened is understanding the process of change. By comparing the state of humankind over decades or centuries, the history student identifies fundamental social trends and analyzes critical causal factors. The history student develops research, analytical, and writing skills necessary not only for work, but for living.

A Bachelor's degree in history provides preparation for immediate postgraduate career entry or advanced training in several social sciences. History majors frequently choose careers in teaching or civil service; in addition, a number develop careers in business. History is traditionally a valued background for applicants to law school and graduate schools of business administration. An attraction of the major in history is its generality, making it an excellent choice for those who are still seeking career goals.

Twelve hours of specific lower division courses and three hours in a senior seminar are required. In the first two academic years all majors should take two introductory sequences: six hours of Western Civilization (HIST 1011 and 1021) and six hours of U.S. History (HIST 1361 and 1371). By the senior year, history majors are required to take a 3-hour seminar, HIST 4981, with research paper. Also, majors must complete at least 18 upper division hours at the University of Colorado unless there is special reason to do otherwise.

Internships. Students may qualify for internships with the Colorado State Historical Society, Historic Denver, Museum of Natural History, the state legislature, and other agencies to earn credit and experience. Information on internships is available from the history faculty.

Honors Program. Students with a cumulative grade-point average of 3.5 or higher may compete for a degree in history awarded with Latin praise of cum laude, magna cum laude, or summa cum laude. A cumulative GPA of 3.5-3.69 is required for cum laude, 3.7-3.89 for magna cum laude, 3.9-4.0 for summa cum laude.
Students must also write a take-home essay exam which will affect the degree of praise.

Requirements for the Minor. Students interested in a minor in history are required to complete 18 hours in specified course work. HIST 1011 and 1021 (Western Civilization I and II) or HIST 1361 and 1371 (U.S. History I and II) (6 credit hours) are required, but may be waived by the department with CLEP scores and after consultation with the student. Electives, at least 9 hours of which must be in upper division history courses, must be chosen. At least 12 credit hours must be completed at CU-Denver. Students must have an average of C or better in this course work to meet requirements for the minor.

Independent Study. Students may take up to 12 credit hours of courses in independent study (no more than 6 per semester), with permission of the instructors concerned.

Graduate
The history faculty of the University of Colorado at Denver offers a master's degree program which encompasses certain fields of modern history. Students applying for admission to the program should have sufficient background in history, though not necessarily a B.A. in the subject, and some knowledge of allied social sciences to afford adequate foundation for graduate work; however, the department encourages applications from individuals interested in resuming their education.

The master's degree in history is traditionally viewed as training for careers in education, government service, museum and archive management, or historic preservation activities as well as for further degree work in law and business management. But the degree program also is attractive to individuals who want to further their general education.

Requirements for Admission
Application forms for admission to graduate study in history are available from the History Department or The Graduate School office. In addition to the general admission requirements of The Graduate School, applicants for admission to the history program must take the verbal section of the Graduate Record Examination. The Admissions Committee will examine carefully all materials submitted, including transcripts and letters of recommendation. We require an undergraduate GPA of 3.25 or better and a Graduate Record Exam verbal score in the 80th percentile or above. In special circumstances, the department may modify these admission standards.

DEGREE REQUIREMENTS
Candidates in history must satisfy the general requirements of The Graduate School which are outlined in this catalog. In meeting the master's degree requirements of the Department of History, candidates have two options. They must complete either 31 semester hours of course work, or 25 semester hours of course work and a thesis. Under the first option, candidates must include in the thirty hours at least 15 hours of course work at the 6000 level or above and 3 hours of seminar work in their major field. The writing of the thesis shall be under the supervision of the candidate's major advisor. Except in special circumstances, the department strongly recommends the thesis option.

Upon nearing the completion of their degree work, all candidates are required to pass a final written comprehensive examination in their major field. The examination, to be registered for in advance, will be given each semester, including summers, at announced times and will be conducted by the department.

A residency of at least one academic year is required for the degree.

Particular Requirements for the Master's Degree in History
1. HIST 6013, Historiography, is required of all graduate students.
2. Each candidate must select one of the fields listed below as a major field which shall comprise not less than 50 percent of the M.A. program:
   - The United States
   - Modern Europe, including Russia and Britain
   - Non-Western World (Latin America, Asia, Africa, Middle East)
3. Candidates must select a second field of history as their minor and complete 6-9 hours of work in that field; minor fields are: U.S. History, Modern Europe, Non-Western World, and Public History.
4. With the consent of their major advisor, candidates may include in their program a minor consisting of work taken outside the Department of History. The minor may be chosen from the following subjects: economics, political science, psychology, sociology, anthropology, geography, philosophy, literature, art history, or education.
5. Candidates working in the area of study involving the use of a foreign language will be required by their major advisor to demonstrate proficiency in that language.
6. In history courses no grade lower than B - will count toward the completion of the course work for the master's degree.
7. Candidates may register for up to six hours of independent study (HIST 6840). In special circumstances, with consent of the major advisor, candidates may register for up to nine hours of independent study.

Additional independent study must be approved by the department chair upon the advice of the major advisor.

For further information concerning the master's degree in history at CU-Denver, direct inquiries to Chairman, Department of History, Campus Box 182, University of Colorado at Denver, P.O. Box 173364, Denver, CO 80217-3364 or telephone 556-4830.

Courses
HIST 1021-3. Western Civilization II. An introduction to modern European civilization and its spread over the world. Covers topics on economics and society, political organization, intellectual history, and art from A.D. 1500 to the 20th century.
HIST 1030-3. Paths to the Present I. This course examines three topics of profound interest to historians world wide: nature and technology; secular and religious faiths; and concepts of political union. The experience of the United States will be related to the experiences of other periods and cultures.
HIST 1361-3. U.S. History to 1876. This course provides an introduction to the major forces, events, and individuals that shaped the historical development of American society beginning with the European discovery of America and concluding with the Civil War, reconstruction, and the early growth of an industrial order.
HIST 1371-3. U.S. History Since 1876. This course provides an introduction to the major forces, events, and individuals that shaped the historical development of American society from the Civil War to the present.

HIST 2120-3. Twentieth Century Europe. A general study of the evolution of Europe since 1900. Covers militarism, fascism, communism, and existentialism in the context of European history.

HIST 2150-3. The British Isles to 1714. A sample of the rich, diverse, and dramatic history of the people of the British Isles. State formation, economic and social change, and cultural values are several of the themes threads through this survey course.

HIST 2160-3. The British Isles Since 1714. In this course we ponder the dramatic rise of the British industrial, commercial, and political empire during the 18th and 19th centuries and its equally dramatic decline in the 20th century.

HIST 2380-3. Afro-American History I. (ETST 2155.) Major emphasis on the events that have occurred in the life of Afro-Americans from the time of their first landing in the U.S. to the present.

HIST 2390-3. Afro-American History II. (ETST 2165.) Continuation of HIST 2380.

HIST 2540/3540-3. Introduction to Women’s Studies: Survey of Feminist Thought. (ENGL 2400/3400.) A survey of the varieties of British and American feminist ideas from the French Revolution to the present, using both fiction and nonfiction texts. This course serves as an introduction to the women’s studies minor.

HIST 2600-3. Colorado History. A survey of the boom and bust heritage of the highest state. Open to all students.

HIST 2610-3. Denver. All students are welcome to this introduction to the social, political, economic and cultural life of the mile-high metropolis. Founded in the 1858 gold rush, Denver has grown into a five county metropolis of two million. Explore this boom and bust history in lectures, slide shows and walking tours. This course offers you a chance to do your own primary source research project, as well as exams and book reports.

HIST 2620-3. Canada to 1867. The history of the Canadian colonies from the founding of Quebec to the establishment of the dominion in 1867. The French regime, the British conquest, the menace from the United States, and the evolution toward federation are emphasized.

HIST 2630-3. Canada Since 1867. Canadian history from establishment of the dominion to the present. Major developments emphasized are the growth of self-government and the sense of nationhood leading to national sovereignty, and the tensions and divisions which have strained the national fabric.

HIST 2680-3. Modern Latin America. A survey of the historical development of the modern Latin American countries beginning with the independence movements of the early 19th century and emphasizing the 20th-century issues and problems that have characterized these countries and affected their relations with the United States.

HIST 3030-3. Reading and Misreading History. This course will examine the many ways history can be interpreted and the importance of perception in the process of writing history. We will see how human beings create history, often influenced by the events of their own times, and often for ambiguous purposes.

HIST 3360-3. American Presidency. This course explores the evolution of the American presidency from George Washington to the present. Its focus is on the personal philosophies and characters of the presidents, on the domestic and foreign affairs of their administrations, and on their campaigns and elections. Emphasis also is placed on the practice of ranking presidents to determine their relative places in history. Through analysis and constructive criticism, the presidents are separated from the mythologies that often surround them. The result is an in-depth look at both the presidential office and the men who filled it.

HIST 3370-3. The American Colonies to 1750. The maturation of the American colonies within the British Empire, the development of the five port towns as commercial and intellectual centers, the creation of uniquely American politics, and the unfolding of critical differences between North and South.

HIST 3440-3. Women in U.S. History. An analysis of women’s place in society, in the labor market and in personal evaluation over the last 300 years.

HIST 3510-3. Famous U.S. Trials - 19th Century. A study of the origins and early history of the American constitution with the famous trials and landmark Supreme Court decisions that affected its development through the 19th century. Also introduces students to constitutional law and legal research.

HIST 3520-3. Famous U.S. Trials - 20th Century. Examines famous trials and landmark decisions of the Supreme Court since 1900. Also introduces students to constitutional law and legal research.

HIST 3550-3. The American Family. Historical perspectives about the viability of the family, its responses to social and economic change, and the roles of its members.

HIST 3560-3. Immigration and Ethnicity in American History. This course will explore the personal and collective experience of immigrants to America. We will discuss problems of assimilation, urban and rural experiences, and implications for politics, the economy, and social attitudes.

HIST 3610-3. Southwestern Cultures. Examines history of Indian, Hispanic, and Anglo cultures in the Southwestern United States, emphasizing cultural interrelations and artistic achievements of each culture.

HIST 3620-3. The American Southwest. An examination of the major forces and issues that have shaped the development of the modern Southwest. Emphasis will be on cultural relations, political issues, and environmental problems.

HIST 3780-3. Introduction to African History. By looking at specific examples of the cultural, political, and economic experience of African society, this course will attempt to introduce and make comprehensive the diverse history of the people of Africa.

HIST 3790-3. African History by Novels. An introduction to modern Africa through the eyes of creative writers. Various topics, such as childhood, religion, colonialism, are presented from two points of view—the African and the non-African.

HIST 3810-3. Topics. Topics in history with varying subtitles reflecting course content.

HIST 3840-1 to 3. Independent Study. Prereq: junior standing and 2.75 grade-point average.

HIST 3880-2 to 3. Literature of Women. Prereq: junior standing.

HIST 4030/5030-3. Early Modern European Intellectual History. This course will focus on the Enlightenment and examine the ideas of Montesquieu, Voltaire, Diderot, Rousseau, Adam Smith, and Condorcet.

HIST 4040/5040-3. Modern European Intellectual History. This course will examine the ideas of Marx, Darwin, Freud, and others in the making of the modern European mind.

HIST 4050/5050-3. Ancient Near East. The history of Egypt, Mesopotamia, and adjoining lands from prehistory through the Roman conquest. Special attention is
given to contributions of the Egyptians, Sumerians, Babylonians, Assyrians, Israelites, and others to world civilization. 


HIST 4070/5070-3. Roman History. The history of ancient Rome from prehistory through the decline and fall of the Roman Empire, emphasizing political, social, environmental, and cultural developments. 

HIST 4090/5090-3. Medieval Europe. This course will survey the general history of Europe from the fall of Rome to the opening of modern Europe.

HIST 4130/5130-3. European Diplomatic History in the 20th Century. This course will examine the European state system and its many crises since 1890.

HIST 4170/5170-3. Victorian England. England during the 19th century was at its zenith as an economic and imperial power. This course explores the basis of British power and the political and social tensions that were created by it.

HIST 4180/5180-3. Twentieth Century England. The 20th century has been an era of retrenchment of England. This course examines the consequences of that decline on the political and social institutions in Great Britain.


HIST 4200/5200-3. History of Ireland. Ireland's unique history and character is examined from the beginning of the Christian era to the present conflicts in Northern Ireland, with emphasis on the 19th and 20th centuries. Some of the topics covered are the distinctive cultural development, the troublesome relationship with England, and the significance and role of the church.

HIST 4230/5230-3. French Revolution and Napoleon. This course will analyze the revolutionary movement in France and Europe from the 1780s to the 1820s.

HIST 4250/5250-3. Germany in the 20th Century. This course will analyze the German problem in modern Europe and seeks to answer the reasons why Germany adopted a policy of reckless imperialism abroad and succumbed to a nasty variety of fascism at home.

HIST 4300/5300-3. Early Russia to 1700. Covers prehistoric Russia; the richness of the Kievan period; icons, architecture, internationalism of Kiev; Mongol society, its influence on Russia; rise of Moscow and its dominance over other contenders for rule; autocracy, serfdom, and the ecclesiastical schism.

HIST 4310/5310-3. The Emergence of Modern Russia: 1700-1856. The development of imperial political institutions, church-state relationships; class stratification; scientific, educational, and cultural developments in 17th, 18th and early 19th-century Russia.

HIST 4320/5320-3. Reform and Revolution in Russia: the 1860s to 1917. Emphasis upon Russia's attempts to modernize, beginning with great reforms of the 1860s and 1870s; increasing polarization of government and opposition groups. Examines governmental point of view through several monographs and revolutionary theory, including those of Marx, Engels, Lenin, and Trotsky.

HIST 4330/5330-3. Soviet Russia Since 1917. Studies the development of the Soviet Union from its formation in the October Revolution, through the Civil War. The new economic policy, industrialization, collectivism, the Stalinist purges, up to the present.

HIST 4340/5340-3. Russian Intellectual and Cultural History. Students will study Russian art and architecture through the 19th and early 20th centuries, read great literary works, and finally, analyze the Russian music of this period.

HIST 4350-3. Genocide and Holocaust. An examination of the Nazi decimation of the Jewish people during the second World War.

HIST 4370/5370-3. The American Revolution. The crisis of the British empire in North America from the end of the French and Indian War to the ratification of the American constitution. Topics include the emerging economy, constitutional arguments against Britain, the conduct of the war and the definition of a republic.

HIST 4380/5380-3. Early National America, 1789-1840. This survey of the 51 years following the inauguration of Washington considers the establishment of the new government, the roles of the president and the Supreme Court, westward expansion and its effects on American economic and political life, and the War of 1812.

HIST 4390/5390-3. U.S. Civil War and Reunion. Begins with the causes and outbreak of the American Civil War, describes the military conflict and the social aspects of the war and examines the federal efforts to reconstruct the southern states and protect the rights of black citizens after 1865.

HIST 4400/5400-3. The Gilded Age: U.S. History, 1865-1900. Topical study of evolution and growth of major American institutions. Among the more important topics are the rise of big business, impact of industrialism, immigration, the rise of the city, the plight of native Americans, the West, agrarian discontent, and foreign policy.

HIST 4410/5410-3. Progressivism, Depression, and War: U.S. History, 1900-1945. Fall. A topical study of changes in American institutions, including attempts to control the corporate giants, growth of labor organization, World War I and reaction, rise of consumerism in 1920s, causes of the crash of 1929, the Depression, the New Deal and its critics, and the U.S. in World War II.

HIST 4420/5420-3. Affluence and Anxiety: the U.S. Since 1945. Spring. An examination of the major developments with special emphasis on the following topics: the onset of the Cold War, growth of unparalleled prosperity, problems of world leadership, the civil rights movement, division over Vietnam, economic uncertainties of the 1970s, and the Reagan era.

HIST 4440/5440-3. U.S. Foreign Policy Since 1912. The main thrust is the emergence of the U.S. from isolation toward full-scale participation in the affairs of Europe and other areas. Special attention is given to U.S. intervention in two World Wars, the Cold War, and the overextension of U.S. commitments since 1960.

HIST 4450/5450-3. Canada and the United States. A survey of U.S.-Canadian relations from colonial times to the present. Major themes include the American invasions of Canada, Canadian fears which led to the creation of the dominion in 1867, boundary and other problems, growth of American cultural-economic domination, and strategic-military integration of the two countries since World War II.

HIST 4460/5460-3. U.S. in the Pacific. Explores some well-known, other little-known facets of American interest and influence in the Pacific. Major topics include development of trade; the growth of the U.S. as a Far Eastern power; evolution of our colonial empire; causes, course, and effects of World War II in the Pacific.

HIST 4470/5470-3. U.S. Society and Thought to 1860. Major topics include the evolution of Protestantism from Puritans to Transcendentalists; humanitarian reforms such as abolition, temperance, and women's rights. European influences on American thought, the effect of industrialization on the development of class society, and American nostalgia for agrarian life.
HIST 4480/5480-3. U.S. Society and Thought Since 1860. A topical survey of the main currents of American thought and their impact upon society. Topics include American philosophy, literature (extensively), art, music, immigration and urbanization, technology, extremism of both left and right, education, etc.

HIST 4500/5500-3. U.S. Military History Since 1900. This course is not a history of America's wars, but is concerned more with the development of military policy. It thus focuses as much upon peacetime as it does on wars, especially emphasizing the reasons for peacetime policy and how the peacetime military structure affected wartime performance. The role of technology of warfare also is emphasized.

HIST 4570/5570-3. Urban America: Colonial Times to the Present. Rise of the American city from colonial time to present. Major emphasis on the process of urbanization since 1840: town promotion, the industrial city, immigration, boss politics and reform, urban technology, transportation systems, minorities, city planning, and the future of urban America.

HIST 4580/5580-3. U.S. Business History. A survey of the major changes in business practices from colonial times to the present. Primary emphasis will be placed on the industrial revolution and after.

HIST 4600-3. American West. HIST 4630/5630-3. Western Art and Architecture. An introduction to Western art and architecture emphasizing their historical context. Students will be required to do book reports and a major research paper. Course consists of lectures and Saturday tours.

HIST 4640/5640-3. Introduction to Public History. This course gives an overview of history outside the academic setting. Students will have the opportunity to learn about jobs through on-site visits and presentations made by people engaged in a wide variety of occupations in history other than teaching.

HIST 4650/5650-3. History in Museums. This course is designed to teach students about preserving, studying, interpreting, assembling and exhibiting artifacts for instruction and enjoyment. There will be numerous on-site visits to a variety of museums. Through projects students will actually participate in aspects of museum work.

HIST 4660/5660-3. Colorado Historic Places. An introduction to community architecture and history for all students. You will learn how to survey, describe, and designate significant architectural and historic structures, prehistoric historic, and contemporary.


HIST 4700-3. International Relations Seminar: Post Cold War World. A capstone course for students engaged in the individually structured international affairs program major and the international affairs program minor. Prereq: enrollment in the international affairs program.


HIST 4750-3. Japan in the Modern Age. Course of Japanese history since the Perry expedition. Covers Japanese Westernization and industrialization, the expansion of empire and defeat in World War II, the occupation, and the amazing technological and social transformation since the occupation years.


HIST 4770/5770-3. The Indochina War. Covers the conflict in Vietnam with roots in the period prior to World War II. Main topics include the rise of nationalism in French Indochina, the war against the French, the northern move to unify Vietnam. American intervention and eventual victory of the northern regime.

HIST 4780/5780-3. Southern Africa. A history in depth of the class of peoples and cultures in Africa south of the Zambesi River. African and Afrikaner political, economic, and cultural development in a single land and the consequences of several competing nationalisms existing side by side will be examined. Apartheid and African opposition to it will be analyzed.


HIST 4830/5830-3. The Second World War. The war in its totality: causes, military strategies (equal treatment to European and Pacific theaters), campaigns, impact of technology and weapons, political and social upheaval.

HIST 4840/4900-1-3. Independent Study. (Undergraduate).

HIST 4981-3. History Seminar. This course is required for history majors and is generally taken in or near the senior year. It covers use of documentary sources and historical criticism, with students utilizing these skills in an historical research paper.


GRADUATE LEVEL

HIST 6013-3. Historiography. HIST 6645-3. Seminar in Archival Management. A study of the theory and principles pertaining to the management of current and non-current records, archival (public) materials and manuscript (private) documents, as well as the administration of archival manuscript depositories for housing records of historical value.


HUMANITIES, HONORS IN

Director: Shirley White Johnston
Office: 1061 9th Street
Telephone: 556-2305

The Honors in Humanities Program (HHP) is a co-curricular program for undergraduate students majoring in any field. Business, engineering, education, sciences, health sciences, and social science majors will find the program attractive; it is also open to students majoring in disciplines within the humanities. Honors in Humanities aims to broaden and deepen the undergraduate educational experience in a coherently designed interdisciplinary curriculum that explores the relationships among many areas of study, including the fine arts, history, language and literature, music, philosophy, political science, theatre, and even modern biology and physics. Students take 21 hours of interdisciplinary coursework that broadens and deepens their undergraduate experience in a coherently designed curriculum. The program leads to graduation with Honors in Humanities for students who, in addition to the work in their major fields, successfully complete the requirements of the program with a 3.0 grade-point average or better.

To be admitted to the Honors in Humanities program students must be currently enrolled at CU-Denver and be in good standing. Interested students should arrange for an interview with the HHP director.

The Curriculum

Students in the program must complete 21 semester hours, distributed as follows: Course Clusters, subject-oriented courses arranged each semester around specific themes or subjects appropriate to humanistic approaches (18 hours) and HUM 4000 (3 hours).

Courses

HUM 1012-3. The Humanistic Tradition: Modes of Expression. Constitutes the introduction to the program. The course is team-taught by faculty from three different disciplines, and attempts to familiarize students with humanistic modes of expression through the study of history, literature, philosophy, music, and the visual and dramatic arts.

HUM 3200-3. Topics. Topics in humanities deal with special topics in art, literature, philosophy, history, communication, music, or theatre or a combination of these fields. Examples of recently taught topics courses are: literature and medicine, science fiction in film, women in art. Prereq: junior standing or permission of instructor.

HUM 4000-3. Senior Seminar. Constitutes the capstone to the program. The course is team-taught by faculty from two different disciplines. It has a thematic focus, which varies with different faculty teams. Sample course themes are Vienna at the Turn of the Century, The Romantic Movement, and Utopias and Dystopias. The senior seminar requires students to do projects that integrate thought and approaches from several fields of study.

HUM 4840-1 to 3. Independent Study. ENGL 3001-3. Critical Writing. This course introduces students to literary theory and also provides extensive practice in writing about literature. This course is required for literature majors. Students should plan to enroll in this course during their junior year. Prereq: for literature majors, ENGL 1400.

ENGL 3010-3. Honors in Humanities Writing Seminar.

HUMANITIES, MASTER OF

Director: M. Kent Casper
Office: 1061 9th Street
Telephone: 556-2305

The Master of Humanities is an interdisciplinary degree offered at CU-Denver. Its purpose is to provide an opportunity for students to broaden their understanding of the relationships among the several areas normally included under the heading of humanities, e.g., communication, philosophy, the arts, literature, and the languages. The Master of Humanities offers all students the opportunity for an individualized self-enrichment program at the graduate level, and a chance to combine their unique abilities and interests in the pursuit of a degree which will provide lifelong satisfaction.

The Master of Humanities also has a special program option, the Cultural Administration Concentration. This includes specially targeted humanities courses as well as courses in marketing, accounting, and management plus an arts administration seminar and an internship with a local arts institution. Interested students should contact the M.H. office for further information.

All courses required for the M.H. degree are offered at CU-Denver.

Requirements for Admission

Before entering the M.H. program, a student is expected to have completed at least 40 semester hours in the humanities, broadly conceived to include general studies in such areas as communication, theatre, philosophy, literature, the arts, the languages, and other areas as agreed upon by the student and the program director.

Students are required to take the Graduate Record Examination or Miller Analog Test.

General requirements of The Graduate School governing acceptance to a master’s degree program are in effect, including the requirement of a 2.75 undergraduate grade-point average.

All applicants to the M.H. program must arrange for an interview with the M.H. Director as part of the initial application process.

Degree Requirements

All courses credited toward the M.H. degree must be taken at the University of Colorado over a period not exceeding five years or six successive summers. Each student’s program is supervised by an advisory committee consisting of two members of the graduate faculty, each from a different area of the humanities.

In addition to the 3 hours for HUM 5003, 3 hours for HUM 5503, and 2 hours for HUM 5924 (all required courses that are described below), candidates for the M.H. degree are expected to complete a minimum of 24 semester hours at the 5000 level or higher in at least two (maximum 3) of the following areas:

- Communication
- English
- Fine arts
- French language and literature
- History
- Music
- Philosophy
- Spanish language and literature
- Theatre

Study in areas other than those listed above may be accepted as agreed upon by the student and the advisory committee. Courses should be chosen on the basis of their potential for interdisciplinary integration toward a central focus.

Within one calendar year of entering the M.H. program, the student is required to take HUM 5003 (may be repeated as HUM 5014). After at least 12 hours in the program, HUM 5503 is required. Finally, HUM 5924 is a required culminating course that is designed to explore directions and provide momentum for the thesis work. All required courses count as part of the 32 hours preceding thesis work.
For the Cultural Administration Concentration, the required core humanities courses apply, with these changes: only 18 hours are elective, 6 hours are required for final seminar and internships, and an additional 9 hours are required in business or public administration credits.

Before completing 15 hours of coursework toward the M.H., the student must meet with an advisory committee to plan the directions and emphases for the remainder of studies for the degree.

After completing the 32 hours required for the degree, the student is required to present a final thesis or project.

Students sign up for a minimum of 3 thesis or seminar project hours. This is a substantial scholarly and/or creative endeavor involving at least two different humanistic areas. It is supervised by the student’s advisory committee. The approved thesis or seminar report of performance shall be recorded in The Graduate School.

Throughout this work toward the M.H. degree, students must uphold the high standards of The Graduate School, maintaining at least a B average in all courses taken subsequent to their admission to the M.H. program.

Required Courses

Courses specifically required for the M.H. degree are HUM 5003, 5503, and 5924.

The 24 hours (in addition to the required courses) required for the degree will normally be drawn from the 3000-level courses which already exist at CU-Denver.

The mandatory courses are listed below. It is supervised by the student’s advisory committee. The approved thesis or report of thesis performance shall be recorded in the Graduate School.

Required Courses

Courses specifically required for the M.H. degree are HUM 5003, 5503, and 5924.

The 24 hours (in addition to the required courses) required for the degree will normally be drawn from the 3000-level courses which already exist at CU-Denver. For further information about the Master of Humanities degree program students should contact 556-2305.

Courses

HUM 5003-3. Introduction to Interdisciplinary Graduate Studies. A one-semester seminar which investigates the definition of the humanities, their place in the life of man, the various media through which they manifest themselves, and related matters. Required of all Master of Humanities degree candidates; open to other qualified graduate and undergraduate students with consent of instructor. (May be repeated as HUM 5014.)

HUM 5010-3. Interdisciplinary Graduate Studies. 

HUM 5014-3. Introduction to Interdisciplinary Graduate Studies. 

HUM 5503-3. Mid-Program Seminar. The seminar explores a specific interdisciplinary topic, involving students in independent research, problem solving, and presentation. Required of all MH students who have completed at least 12 hours of graduate work. Open to non-MH graduate students with consent of instructor. (May be repeated as HUM 5514.)

HUM 5514-3. Mid-Program Seminar.

HUM 5840-1 to 3. Independent Study.

HUM 5924-2. Directed Readings in Interdisciplinary Humanities. Capstone course of the M.H. Program, concentrating on the student’s interdisciplinary focus that will form the topic of comprehensive exam and/or thesis project. Involves work with two-member faculty advisory committee. Required of all M.H. Students after 30 hours of graduate work.

HUM 5839-1 to 6. Cooperative Education.

HUM 5850-1 to 8. Master’s Thesis.

HUM 5860-1 to 8. Master’s Project.

HUM 5884-3. Topics in Interdisciplinary Humanities.

MATHEMATICS

Chair: William L. Briggs
Office: CU-Denver Building, Suite 540
Telephone: 556-8442

Faculty: Professors: Bennett Fox, Harvey J. Greenberg, Collin J. Hightower, J. Richard Lundgren, Thomas A. Manteuffel, Stephen F. McCormick, Stanley E. Payne, Roland A. Sweet, Fred Glover (Concurrent)


Assistant Professors: David Fisher, James Koehler, Jennifer Ryan

Adjunct: David Fox, Chaoqun Liu, John W. Ruge

Mathematics Advisory Committee:

Ed Collins, Englewood High School
Bert Bradford, IBM
Tony Cox, US WEST
Paul Domich, NIST
Jim Hertzov, Digital Equipment Corp.
Rob Johnson, William M. Mercer, Inc.
Lynn Leader, Digital Equipment Corp.
Jim Mielke, Storage Technology
Norma Mozez, IBM
Mohsen Paziardeh, Advanced System Technologies, Inc.
Althea Pearlman, Boulder High School
Deanna Shank, Friend of the Department
Dennis Shepard, Green Mountain High School
John Walton, George Washington High School
Lois Walton, Hughes Aircraft

The Department of Mathematics at CU-Denver offers courses and research opportunities with an emphasis on applied and computational mathematics. Traditional courses such as calculus, linear algebra, probability, statistics, and discrete mathematics are offered by the department regularly. In addition, contemporary subjects such as continuous, probabilistic optimization, and discrete modeling; supercomputing and parallel computation; artificial intelligence; optimization; and operations research are also well represented by course offerings and faculty interests. In all of its activities, the department embraces the outlook that mathematics is a powerful tool that can be used to solve problems of immediate and practical importance.

The study of mathematics with an emphasis on computers and applications can prepare students for careers in engineering, the sciences, business and management, actuarial science, public health, and all computer-dependent disciplines.

Computational Mathematics Group

The Computational Math Group at CU-Denver is a broad-based response to the rapid and dramatic changes in the various fields of computation. The group resides in the Department of Mathematics, but is intended to be a highly interdisciplinary organization with associates in other departments at CU-Denver, on other campuses of the Front Range, and within the business and research community of greater Denver. Its ultimate goal is that CU-Denver become an internationally recognized site at which computational mathematics thrives and is advanced.

Math Clinic

The Mathematics Department conducts several Math Clinics each year which are open to both undergraduates and graduate students. Each clinic is sponsored by a business, government agency, or research organization in the metropolitan area. The clinic sponsor provides a specific project on which students work with the supervision of a faculty member and a sponsor representative. Every clinic results in a final report to the sponsor and provides participating students with an opportunity to apply mathematics to relevant problems. Recent Math Clinic sponsors include US West, Martin Marietta, and Los Alamos National Laboratories.
Computer Science

For students interested in studying computer science in depth, or preparing for a career in computer science, there are several options in the College and the University. Many students interested in computer science select the computer science option of the mathematics major. Another possibility is to designate mathematics/computer science as a primary subject in the College's individually structured major program. In this program, a student completes 30 semester hours in computer science (and computer-related courses) and 30 semester hours distributed over one or two other subject areas. In addition to these options in the College, the College of Engineering and Applied Science offers a major in computer science and the College of Business offers a specialization in management science and information systems.

Undergraduate Program

The undergraduate B.S. program has six options from which students may choose depending on their interests or career plans: pure mathematics, applied mathematics, computer science, probability/statistics, actuarial science, and mathematics education. It also is possible for students to minor in mathematics.

SELECTING A FIRST UNIVERSITY MATHEMATICS COURSE

The following information should assist in choosing a first course in mathematics at CU-Denver. Be aware that admission to the beginning mathematics courses is based on standardized placement exams administered by the Testing Center (556-2861). If your first CU-Denver mathematics course is MATH 1070, 1110, 1120, 1130 or 1401, you must take a standardized placement exam.

If you are a transfer or advanced placement student, and are starting with MATH 2411 (Calculus II), or higher, see a departmental advisor if you have any questions. Otherwise, examine the following chart to determine your first course.

### TABLE TO GUIDE SELECTION OF FIRST CU-DENVER MATH COURSE

<table>
<thead>
<tr>
<th>Current Knowledge in Math</th>
<th>Recommended First Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Less than 1 yr HS algebra and 1 yr HS geometry</td>
<td>Beginning Algebra at a community college</td>
</tr>
<tr>
<td>B. 1 yr HS algebra and 1 year HS geometry</td>
<td>MAT 105. at CCD</td>
</tr>
<tr>
<td>C. 2 yrs HS algebra and 1 yr HS geometry with:</td>
<td></td>
</tr>
<tr>
<td>(i) C average “A” placement exam</td>
<td>MATH 1110. (with placement exam)</td>
</tr>
<tr>
<td>(ii) at least B “CR” placement exam</td>
<td>MATH 1120. (with placement exam)</td>
</tr>
<tr>
<td>D. 2 yrs HS algebra and 1 yr HS geometry and trigonometry with:</td>
<td></td>
</tr>
<tr>
<td>(i) C average “CR” placement exam</td>
<td>MATH 1130. (with placement exam)</td>
</tr>
<tr>
<td>(ii) at least B “CR” placement exam</td>
<td>MATH 1401. (with placement exam)</td>
</tr>
</tbody>
</table>

### REQUIREMENTS FOR A B.S. IN MATHEMATICS

A B.S. in mathematics may be earned by completing at least 42 semester hours in mathematics with an average of C (2.0) and with a grade of C− (1.7) or better in all courses. At least 30 of the 42 hours must be upper division (3000 or 4000 level) courses, excluding MATH 3040. Of these, at least 15 hours must be taken at CU-Denver.

All majors should consult the CLAS Advising Office for information about additional requirements for the B.S. degree. Majors must choose or be assigned an advisor. Contact the department secretary for information. All majors must complete the following:

1. Three semesters of calculus (MATH 1401, 2411, 2421).
2. Four core courses: Abstract Math (MATH 3000), Applied Linear Algebra (MATH 3911), Applied Graph Theory (MATH 4408), and Senior Seminar (MATH 4000).
3. Two computer science courses approved by the advisor.
4. Required courses listed under one option (note that each option includes a two-semester sequence).
5. Electives approved by the advisor.

It is highly recommended that majors take the Math Clinic (MATH 4779). For more information see the department secretary or the clinic director.

### Required Courses for Each Option

**Pure Mathematics Option**

1. Abstract Algebra (MATH 3140).
2. Advanced Calculus I and II (MATH 4310, 4320).
3. Topology (MATH 4020).

**Applied Mathematics Option**

2. Differential Equations (MATH 3200).
3. Mathematical Modeling (MATH 4791, 4792, 4793, or 4794).
4. Math Clinic (MATH 4779).
5. A two-semester sequence to be selected from the following:
   a. Advanced Calculus (MATH 4310, 4320).
   b. Applied Graph Theory/Combinatorics (MATH 4408, 4409).
   c. Artificial Intelligence (MATH 4576, 4577).
   d. Numerical Analysis (MATH 4650, 4660).
   e. Probability/Statistics (MATH 4810, 4820).
   f. Mathematical Modeling (two courses from MATH 4791, 4792, 4793, and 4794).

**Computer Science Option**

2. Numerical Analysis I (MATH 4650).
3. Parallel Computing with Ada (MATH 4673) or Parallel Algorithms (MATH 4674).
4. A two-semester sequence to be selected from:
   a. Applied Graph Theory/Combinatorics (MATH 4408, 4409).
   b. Numerical Analysis (MATH 4650, 4660).
   c. Artificial Intelligence (MATH 4576, 4577).
5. The two required computer science courses should be C SC 1410 or MATH 3250 and C SC 2411 or MATH 3260.
6. Assembly Language Programming (C SC 2525).
7. One upper division computer science elective approved by the advisor.

**Probability/Statistics Option**

1. Differential Equations (MATH 3200).
2. Probability (MATH 4810).

**Mathematics Education Option**

1. Abstract Algebra (MATH 3140).
2. Higher Geometry I, II (MATH 3210, 4220).
3. Probability (MATH 4810).

*Note: MATH 4220 is offered in the spring of even numbered years. Students interested in teaching in public schools are...*
required to be certified from the School of Education.

Actuarial Science Option
2. Probability (MATH 4810).

Requirements for Mathematics Minor
Students may design their own option in consultation with an advisor at least one year prior to graduation. MATH 1401 and 2411 —— 8 hours
At least 12 semester hours of mathematics electives, including at least 9 hours of course work at the 3000 level or above and not including MATH 3040 —— 12 hours
Total —— 20 hours

Note: All mathematics courses numbered 3000 and above must be completed at CU-Denver. No grade below a C—will be counted toward the minor requirements. Mathematics courses numbered lower than calculus cannot be counted toward the minor requirements.

Graduation With Honors
The Mathematics Department recognizes students who complete the undergraduate program with distinction. To be eligible for graduation with honors (cum laude, magna cum laude, summa cum laude) a student must graduate with an overall grade-point average of 3.2 or better; must complete at least 36 hours of mathematics courses with a grade-point average of 3.5 or better; and must complete an honors project.

Students who wish to be considered for graduation with honors should notify an advisor as early in the program as possible.

Graduate Program
The Department of Mathematics offers the M.S. degree in applied mathematics and the Ph.D. degree in applied mathematics and supports the Master of Basic Science. Each of these degree programs conforms to the rules and policies of The Graduate School.

Requirements for Admission
To begin graduate work toward the M.S. or Ph.D. degrees, a student should have at least the following preparation: 30 semester hours of mathematics, at least 24 of which are at or above the level of MATH 3000. These courses should include a full year of advanced calculus, 3 semester hours of linear algebra, and 3 semester hours of either differential equations or abstract algebra.

Students who do not have all the prerequisites for one of the advanced degrees, or who have a cumulative undergraduate grade-point average that is less than 2.75, may be eligible for provisional admission (also see The Graduate School admission requirements).

Requirements for the M.S. Degree
Students must present 30 hours of course work and maintain a 3.0 grade-point average for the M.S. degree. At least 24 of these hours must consist of graduate level (numbered 5000 or higher) mathematics courses. Any courses taken outside of the department must be numbered 4000 or higher. Up to 9 semester hours may be transferred from other institutions.

A student may elect to devote from four to six hours (of the 30 required hours) to the writing of a thesis. Following completion of course work, candidates must make a one-hour oral presentation before a committee consisting of three graduate faculty members.

The M.S. degree is designed to prepare a candidate to assume a position as an applied mathematician, a teacher, or to continue studies at the Ph.D. level. It provides training in applied mathematics as it is represented in the fields of (1) discrete mathematics, (2) operations research, (3) applied statistics, (4) applied probability, (5) numerical analysis, (6) mathematics of science and engineering, and (7) mathematical foundations of computer science.

Each student must take either applied analysis or real analysis and applied linear algebra. The choice of one of the above seven options will determine additional course requirements.

All master's degree students are encouraged to participate in the Math Clinic, a unique program in which students have an opportunity to work on real-world problems supplied by local businesses, research firms, and government agencies.

Requirements for the Ph.D.
The Mathematics Department also offers a Ph.D. in applied mathematics. The degree is designed to give candidates a contemporary, comprehensive training in applied mathematics and to provide research opportunities in the special fields of discrete mathematics, operations research, applied probability, computer science, computational mathematics, applied statistics, and the mathematics of science and engineering.

There are six phases of the Ph.D. program. A candidate must fulfill course requirements, pass the preliminary examinations, establish a Ph.D. committee, meet the academic residency requirement, pass the comprehensive examination, and write and defend a thesis.

Students must complete at least 42 semester hours of formal (non-thesis) course work at the graduate level with at least four courses being at the Ph.D. level (7000-level courses). In addition, 30 hours of thesis credit must be taken. Specifically required courses are 3 hours of Math Clinic and 3 hours of readings courses. A 3.25 grade-point average must be maintained throughout all course work.

Six semesters of residence credit are required as specified in the rules of The Graduate School. All students are strongly advised to spend at least one year doing full-time course work or research with no outside employment.

The preliminary examinations are designed to determine that students who intend to pursue the Ph.D. program are qualified to do so. These two three-hour written examinations are in the areas of applied analysis and applied linear algebra. Both examinations should be passed within two semesters of completing 30 hours of graduate course work.

Application for candidacy is made after completion of the preliminary examinations and three credits of residency. The application must be submitted at least two weeks before taking the comprehensive examination. The comprehensive examination is designed to measure breadth in applied mathematics and depth in a specific field. The breadth component is tested in an oral examination, the depth component in a written examination.

Each student must write and defend a thesis containing original contributions and evidence of significant scholarship. The thesis defense is public and must be given before an examining committee approved by the dean of The Graduate School.

Courses
MATH 1000-1. CLAS Computation Test. Meets one time only, at which time the CLAS computation examination will be given to new students in CLAS. A passing grade on this examination satisfies the CLAS computation requirement. This is not a placement test. Offered every semester.

MATH 1080-3. Polynomial Calculus. A one-semester course in calculus. No knowledge of trigonometry or analytic geometry is presupposed. Intended especially for social science and business students and for the general liberal arts student. Those planning to take more than one semester of calculus should take MATH 1401 instead of MATH 1080. Prereq: MATH 1070. Offered every semester.

MATH 1100-3. College Algebra. Topics in algebra designed for students who intend to take the calculus sequence. Prereq: two years high school algebra and one year high school geometry and placement exam. No co-credit with MATH 1130. Offered every semester.

MATH 1120-3. College Trigonometry. Topics in trigonometry, analytic geometry, and elementary functions designed for students who intend to take the calculus sequence. Prereq: MATH 1110 or placement exam. No co-credit with MATH 1130. Offered every semester.

MATH 1130-4. Precalculus Mathematics. This is a condensed treatment of the topics in MATH 1110 and 1120. Prereq: placement exam. No co-credit with MATH 1110 and 1120. Offered every semester.

MATH 1350-3. Computers in the Arts and Sciences. A laboratory course focusing on using computers to enhance human productivity in organizing, analyzing, writing, and graphically representing information. General topics include history, ethics, computer theory, problem-solving, and social issues such as education, privacy, and job evolution. Applications include the use of word processors, spread sheets, data base managers, graphics tools, elementary Pascal programming, and communication. Each student will have 2 hours per week of hands-on laboratory instruction using modern professional software. No previous computing experience is presumed. Offered every semester.

MATH 1401-4. Analytical Geometry and Calculus I. The first course of a three-semester sequence (MATH 1401, 2411, 2421) in calculus. Students cannot receive credit for both MATH 1080 and 1401. Topics covered include an introduction to differential and integral calculus, including applications, of the derivative and the definite integral. Prereq: MATH 1120 or 1130; or placement exam. Offered every semester.

MATH 2000-3. Mathematics: A Human Endeavour. A course intended for non-majors. An examination of the science of mathematics from a humanistic viewpoint. Topics will include the relationship between mathematics and society, the internal conflicts in the mathematical community and the philosophical basis of mathematics. This is a readings/discussion class. Offered every Fall and Spring semester.

MATH 2410-3. Analytic Geometry and Calculus II for Engineers. For engineering students only. The second of a three semester sequence (MATH 1401, 2411, 2421) in calculus. Topics covered include exponential, logarithmic, and trigonometric functions; techniques of integration, indeterminate forms and improper integrals, infinite series. Prereq: MATH 1401. Offered every semester.

MATH 2411-4. Analytical Geometry and Calculus II. The second of a three-semester sequence (MATH 1401, 2411, 2421) in calculus. Topics covered include exponential, logarithmic, and trigonometric functions; techniques of integration, indeterminate forms and improper integrals, infinite series. Prereq: MATH 1401. Offered every semester.

MATH 2420-3. Analytic Geometry and Calculus II for Engineers. For engineering students only. The third of a three semester sequence (MATH 1401, 2411, 2421) in calculus. Topics covered include vectors, vector-valued functions, partial differential calculus. Prereq: MATH 2410 or 2411. Offered every semester.


MATH 2614-3. Discrete Mathematics I. (C SC 2614.) First course of a two-semester sequence to provide discrete mathematics concepts needed in computer science. Topics include propositional and predicate logic, methods of proof, mathematical induction, functions and relations, and principles of counting. Emphasis is placed on applications in computer science and the use of computers in problem solving. Prereq: C SC 1410 and MATH 1401. Offered every Fall and Spring semester.

MATH 2830-3. Applied Statistics for Non-Math Majors. Study of basic statistical concepts. Introduction to statistical distributions, statistical inference, and hypothesis testing. Prereq: college algebra or equivalent. Credit is not given to math majors for this course. No co-credit with MATH 3800. Offered every semester.

MATH 3000-3. Introduction to Abstract Mathematics. Students learn to prove and critique proofs of theorems by studying elementary topics in abstract mathematics, including such necessary basics as logic, sets, functions, equivalence relations, elementary combinatorics, and graph theory. Prereq: MATH 2411. Offered every semester.

MATH 3010-3. Applied Abstract Algebra. An introduction to those concepts in algebra and logic which have application to computer science. Topics include finite state machines, formal languages, groups, coding theory, and finite fields. Prereq: MATH 3000 or MATH/C SC 2614 and 3614. Offered every Fall and Spring semester.

MATH 3040-4. Mathematics for Elementary Teachers. Topics include intuitive and logical development of geometric ideas relevant to K-6 curriculum; measurement of length, area, volume, mass, angle, temperature, and time; stress is on the metric system; further study of the rational number system, probability and statistics; applications and problem solving. Carries credit only for elementary education majors. Offered every semester.


MATH 3140-3. Introduction to Modern Algebra. Groups, rings, fields, polynomials. Prereq: MATH 3000, or consent of the department. Offered every Fall semester.

MATH 3191-3. Applied Linear Algebra. Designed primarily for students interested in applied mathematics, computer science, science or engineering. Topics include solving systems of equations using Gaussian elimination with partial pivoting, LU decomposition of matrices, matrix algebra, determinants, vector spaces, linear transformations, eigenvalues, and applications. Prereq: MATH 2411 with grade of C or better. Offered every semester.

MATH 3200-3. Elementary Differential Equations. Systematic introduction to ordinary differential equations. Topics include equations of order one, linear equations with constant coefficients, systems of equations, variation of parameters, the Laplace transform, and infinite series solutions to linear equations. Prereq: MATH 2421 and 3191. Offered every semester.

MATH 3210-3. Higher Geometry I. Axiomatic systems. The foundations of Euclidean and Lobachevskian geometries. Prereq: MATH 3000 or consent of instructor. Offered every Fall semester.
Note: Students enrolled at the 5000 level may expect additional work and evaluation commensurate with graduate standards.

MATH 3250/5250-3. Problem Solving with Pascal I. A laboratory course that covers a wide variety of techniques for solving problems and for developing, refining, and coding algorithms using the computer language Pascal. Appropriate for elementary teachers, as well as teachers of social and natural sciences, and mathematics. No previous programming experience is needed.

MATH 3260/5260-3. Problem Solving with Pascal II. A laboratory course that extends MATH 3250/5250 and covers an added variety of techniques for solving problems and for developing, refining, and coding algorithms using the computer language Pascal. Topics include data structures, advanced Pascal, graphics, and object-oriented problem solving and programming. Appropriate for elementary teachers, as well as teachers of social and natural sciences, and math. Prereq: MATH 3250/5250, C SC 1410, or equivalent.

MATH 3300-3. Introduction to Operations Research. (ISMG 3300.) A mathematical approach to decision making. Topics covered include linear programming, transportation problems, network models, inventory models, queueing theory, and simulation. Prereq: MATH 2411.

Offered every Fall semester.

MATH 3614-3. Discrete Mathematics II. (C SC 3614.) Second course of a two-semester sequence to provide discrete mathematics concepts needed in computer science. Topics include probability, recurrence equations, trees, graphs, matrix algebra, and an introduction to abstract algebra. Emphasis is placed on application in computer science and the use of computers in problem solving. Prereq: C SC 2614 or MATH 2614. Offered every Fall and Spring semester.

MATH 3800-3. Probability and Statistics for Engineers. Basic probability theory, discrete and continuous random variables, point and interval estimation, test of hypotheses, one-way analysis of variance, and simple linear regression. Prereq: MATH 2421. No co-credit with MATH 4810 or 4820.


MATH 3939-1 to 3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: junior standing and 2.75 grade-point average.

MATH 4000-3. Senior Seminar. This capstone course is required of all math majors during their senior year. The primary task will be the writing and presentation of a senior thesis in a subject chosen by the student. There will be invited lecturers both from the faculty and from various industries who will address the seminar on a variety of topics. Prereq: senior standing. Offered every Fall and Spring semester.

MATH 4010-3. History of Mathematics. A history of the development of mathematical techniques and ideas from early civilization to the present, including the interrelationships of mathematics and sciences. Prereq: MATH 1401. Offered once a year.

MATH 4020-3. Introduction to Topology. Metric spaces and topological spaces, compactness, separation properties, connectedness; Banach and Hilbert spaces. Prereq: MATH 3000 or consent of instructor. Offered every Spring semester.


MATH 4120-3. Topics in Mathematics. Special topics in mathematics will be covered. Students should check the current Schedule of Classes to obtain the topics to be covered as well as the prerequisites. With permission, this course may be taken for credit more than once.

MATH 4150-3. Theory of Automata. Finite state machines, regular expressions, paths on graphs and the relations among these. Turing machines, some equivalent machines, the idea of computability. Prereq: a full year of computer science. Offered infrequently.

MATH 4220-3. Higher Geometry II. An introduction to the study of affine and projective geometry. Prereq: MATH 3210 or consent of instructor. Offered Spring of even numbered years.

MATH 4310-4. Advanced Calculus I. Calculus of one variable, the real number system, continuity, differentiation, integration theory. Prereq: MATH 2421 and 3000. Offered every Fall semester.

MATH 4320-4. Advanced Calculus II. Sequences and series, convergence, uniform convergence; Taylor's theorem; calculus of several variables including continuity, differentiation and integration; Picard's theorem in ordinary differential equations and Fourier series. Prereq: MATH 4310. Offered every Spring semester.

MATH 4330-3. Advanced Calculus III. Vector fields, implicit function theorem, inverse function theorem; Green's, Stokes', and divergence theorems; Taylor's theorem for functions of several variables; calculus on manifolds. Prereq: MATH 4320. Offered infrequently.

MATH 4370-3. Advanced Calculus for Engineers. Vector analysis; vector calculus, including divergence, curl, Green's theorem, Stokes' theorem, and the divergence theorem. Tensor analysis. Prereq: MATH 3191 or 3020. Offered once a year.

MATH 4387-3. Statistical Methods. Topics include design and analysis of experiments, linear and nonlinear models, analysis of variance and covariance, and failure of assumptions. Emphasis is on the practical aspects of applying statistical techniques to the analysis of data in business, engineering, and the behavioral and biological sciences. Offered every other year.

MATH 4409-3. Applied Graph Theory (C SC 4134.) An introduction to discrete structures and their applications. Major emphasis is on applications of graph theory to computer science, engineering, operations research, social science, and biology. Topics include connectivity, coloring, trees, Euler and Hamiltonian paths and circuits, matching and covering problems, shortest route, and network flows. Prereq: MATH 3000 or MATH/C SC 2614 and 3614. Offered every semester.

MATH 4409-3. Applied Combinatorics. Major emphasis is on applied combinatorics and combinatorial algorithms, with applications in computer science and operations research. Topics include general counting methods, generating functions, recurrence relations, inclusion-exclusion, and block designs. Prereq: MATH 4408 and 3010 or 3140. Offered every Spring semester.

MATH 4410-3. Coding Theory and Cryptology. Addresses two related problems in communication theory. The first deals with errors that occur in the transmission of information; how they can be detected and corrected. The second is concerned with the security of transmitted information. Prereq: MATH 3191. Offered Fall of odd numbered years.

MATH 4459-3. Complex Variables for Engineers and Scientists. Topics include complex algebra, Cauchy-Riemann equations, Laurent expansions, theory of residues, complex integration, and introduction to conformal mapping. Technique and applicability are stressed. Prereq: MATH 3200. Offered infrequently.


MATH 4576-3. Mathematical Foundations of Artificial Intelligence I. Topics include logic-related mathematical foundations; knowledge representation and models of thought and learning; search algorithms and heuristics for problem solving; pattern recognition concepts, methods, and applications; expert systems and game theory. Prereq: C SC 1410 or MATH 3250, C SC 3614 or (MATH 3000 and 3191). Offered every other year.

MATH 4577-3. Mathematical Foundations of Artificial Intelligence II. Advanced study of topics introduced in 4576/5576 plus other topics, such as neural networks, which extend the breadth of math. Foundations of artificial intelligence. Prereq: MATH 4576.


ADA is taught so students have at least one-half semester to practice parallel programming using ADA tasks. Prereq: a minimum of one year of Pascal or 'C'. Offered once a year.

MATH 4674-3. Parallel Processing Algorithms. Algorithms for parallel computers (computers consisting of several connected processors); sorting, fast Fourier transforms, matrix multiplication, solving linear systems, network problems. Prereq: MATH 3191 and computing experience. Offered infrequently.

MATH 4750-3. Topics in Finite Mathematics. Especially suitable for those students who are not majoring in engineering or physical science. Prereq: consent of department.

MATH 4779/5799-3. Math Clinic. The clinic is intended to illustrate the applicability and utility of mathematical concepts in investigations of various contemporary societal issues. Research problems investigated by the clinic may originate from a variety of sources—business and industry, government agencies, educational institutions, or nonprofit organizations. Supervised by university faculty, each research team investigates problems requiring substantial time commitments over one semester, the summer, or an entire academic year. Proposed projects are reviewed by a faculty panel prior to final approval. Prereq: consult Schedule of Classes or instructor. Offered every Fall and Spring semester.

MATH 4780-3. Mathematical Foundations of Operations Research. This course surveys mathematical approaches to the following questions: How can a decision problem be usefully represented by a mathematical model? How can we obtain effective answers to problems? What do the answers mean? Particular techniques include linear programming, network design and scheduling. It is intended to demonstrate the power and limitations of mathematical methods. Prereq: consent of instructor. Offered infrequently.

MATH 4791-3. Continuous Modeling. This course surveys a variety of mathematical problems that arise in the natural sciences and engineering. Topics, which vary with the instructor, may include population models, epidemic models, mechanics, heat transfer and diffusion, topography, pharmacokinetics, traffic flow, fractal models, wave phenomena, natural resource management and underground water flow. In keeping with the title of the course, most models discussed are based on differential and integral equations. The emphasis of the course is formulation and validation of models as well as methods of solution. Prereq: MATH 3191, 3200. Offered every third semester.

MATH 4792-3. Probabilistic Modeling. This course covers Markov chains, Poisson processes, continuous Markov chains, elementary topics in queueing theory and some mathematical aspects of Monte-Carlo simulation including random variate generation, variance reduction and output analysis. Prereq: either MATH 3800 or 4810 and some programming experience.

MATH 4793-3. Discrete Modeling. This course will focus on the use of discrete modeling to solve problems in a wide variety of disciplines. Applications will be selected from computer science, communication networks, economics, operations research, and the social, biological, and environmental sciences. Graph theory and combinatorics are the basic mathematical tools. Prereq: MATH 4408 and 3191. Offered every third semester.

MATH 4794/5794-3. Modeling in Optimization. This course in mathematical modeling focuses on optimization models. Applications are taken from both natural phenomena and social systems. Examples of the former are principles of least time, chemical equilibrium and blood circulation. Examples of the latter are market economics, facility location, land management, and congressional districting. These examples are used to build general principles of model building and analysis in optimization. Prereq: MATH 2421 and knowledge of linear algebra.


MATH 4820-3. Mathematical Statistics. Point and confidence interval estimation, principles of maximum likelihood, sufficiency and completeness, tests of simple and composite hypothesis, linear models and multiple regression, analysis of variance. Prereq: MATH 4810 or consent of instructor. Offered every semester.

MATH 4840-1 to 3. Independent Study. (Undergraduate). Variable credit depending on the student's needs. This course is listed for the benefit of the advanced student who desires to pursue one or more topics in considerable depth. Supervision by a full-time faculty member is necessary, and the dean's office must concur. Students may register for this course more than once with departmental approval.
GRADUATE LEVEL

MATH 5010-3. History of Mathematics. A history of the development of mathematical techniques and ideas from early civilization to the present including the interrelationships of mathematics and sciences. Prereq: MATH 1401. Not open to students who have had MATH 4010. Offered once a year.

MATH 5011-3. Theory of Numbers I. Divisibility, congruences, law of quadratic reciprocity, Gaussian integers, arithmetic and factorization in quadratic fields and applications of factorization theory to Diophantine equations. Prereq: graduate standing. Offered infrequently.

MATH 5070-3. Applied Analysis. Course is designed to serve as an introduction to MATH 5131. Topics include point set topology in metric spaces, properties of functions, sequences and series of functions, fixed point theory, complex functions, differential of complex functions, contour integration. Taylor and Laurent series. Prereq: MATH 4320. Offered every Fall semester.


MATH 5201-3. Topology I. Metric spaces, topological spaces, compactness, separation properties, connectedness, Banach and Hilbert spaces, advanced topics. Prereq: MATH 4020 or 5070. Offered infrequently.


MATH 5300-3. Sample Surveys. Application of statistical sampling theory to the design of population surveys, including simple random sampling, stratified, systematic and cluster sampling, the sources of errors. Ratio estimates and cost minimization. Prereq: MATH 4810 or consent of instructor. Offered infrequently.


MATH 5387-3. Statistical Methods I. Research I. A two-semester course in applied statistics. Topics include design and analysis of experiments, linear and nonlinear models, analysis of variance and covariance, failure of assumptions, robust methods, exploratory data analysis. Emphasis is on the practical aspects of applying statistical techniques to the analysis of data in business, engineering, and the behavioral, biological, and physical sciences. Prereq: MATH 4820, or consent of instructor. Offered every other year.


MATH 5405-3. Applied Graph Theory. Major emphasis is on applied graph theory and graph algorithms. Topics will include applications of graphs to problems in computer science, engineering, operations research, biology, and environmental and social science. Prereq: graduate standing.

MATH 5410-3. Coding Theory and Cryptology. Addresses two related problems in communication theory. The first deals with errors that occur in the transmission of information; how they can be detected and corrected. The second is concerned with the security of transmitted information. Prereq: MATH 3191 and graduate standing. Offered Fall semester of odd years.

MATH 5446-3. Theory of Automata. (C SC 5464). Studies the relationships between classes of formal languages (regular, context-free, context-sensitive, phrase-structure) and classes of automata (finite-state, pushdown, turing machines). Additional topics include decidability and computability issues. Prereq: C SC 3401 and 3614 or MATH 3000/3010. Offered infrequently.

MATH 5577-3. Mathematical Foundations of Artificial Intelligence I. Topics include logic-related mathematical foundations; knowledge representation and models of thought and learning; search algorithms and heuristics for problem solving; pattern recognition concepts, methods and applications; expert systems and game theory. Prereq: C SC 1410 or MATH 3250, C SC 3614 or MATH 3000 and 3191. Offered every other year.

MATH 5578-3. Mathematical Foundations of Artificial Intelligence II. Advanced study of topics introduced in MATH 4576/5576 plus other topics such as neural networks, which extend the breadth of math foundations of artificial intelligence. Prereq: MATH 5576. Offered infrequently.

MATH 5593-3. Linear Programming. This is a fundamental course for students specializing in operations research and/or optimization. Theoretical aspects of linear programming, including the theory of linear inequalities and polyhedra, is covered. Commonly used solution techniques are introduced. Prereq: consent of instructor. Offered every other year.

MATH 5660-3. Numerical Analysis I. The essential topics of the course include error analysis, direct and iterative methods of solution for linear systems of equations, solution of nonlinear equations and systems of nonlinear equations, interpolation and approximation. Prereq: MATH 3191, 3200 and programming experience.

MATH 5661-3. Numerical Analysis II. This course will cover numerical approximation and differentiation, numerical solution of ordinary and partial differential equations. Prereq: MATH 5660.


MATH 5665-3. Nonlinear Optimization. (C SC 5656). This course presents mathematical foundations of optimization with focus on nonlinear forms. Topics include
convexity, duality, and optimality conditions. Concepts of algorithm design and analysis are developed from these basic topics and elements of fixed point theory. Particular algorithms are considered for unconstrained, linearly constrained, and nonlinearly constrained models. Prereq: MATH 3191 and 4320. Offered every other year.


MATH 5673-3. Parallel Computing and ADA. Covers the language ADA and general issues related to parallel/concurrent computing: synchronization, deadlock, starvation, load balancing, comparison of parallel architectures, Amdahl's Law, limits on parallelism, and object-oriented problem solving in parallel programming. ADA is taught so students have at least one-half semester to practice parallel programming using ADA tasks. Prereq: a minimum of one year of Pascal or 'C'. Offered once a year.

MATH 5674-3. Parallel Processing Algorithms. Algorithms for parallel computers (computers consisting of several connected processors); sorting, fast Fourier transforms, matrix multiplication, solving linear systems, network problems. Prereq: MATH 3191 and computing experience. Offered infrequently.

MATH 5718-3. Applied Linear Algebra. This core course of the graduate program is designed to present those topics in linear algebra which are important in applications. Topics covered include: practical solution of systems of equations, projections, eigenvalues and eigenvectors, unitary transformations, Schur, QR, and singular value decompositions, similarity transformations, Jordan forms, and positive definite matrices. Prereq: MATH 3191, or consent of instructor. Offered every Spring semester.

MATH 5737-3. Topics in Applied Mathematics. Selected topics in mathematical problems arising from various applied fields such as mechanics, electromagnetic theory, economics, etc. Prereq: consent of instructor.

MATH 5738-3. Topics in Applied Mathematics. Selected topics in mathematical problems arising from various applied fields such as mechanics, electromagnetic theory, economics, etc. Prereq: consent of instructor.

MATH 5791-3. Continuous Modeling. This course surveys a variety of mathematical problems that arise in the natural sciences and engineering. Topics, which vary with the instructor, may include population models, epidemic models, mechanics, heat transfer and diffusion, tomography, pharmacokinetics, traffic flow, fractal models, wave phenomena, natural resource management and underground water flow. In keeping with the title of the course, most models discussed are based on differential and integral equations. The emphasis of the course is formulation and validation of models as well as methods of solution. Prereq: MATH 3191, 3200. Offered every third semester.

MATH 5792-3. Probabilistic Modeling. This course covers Markov chains, Poisson processes, continuous Markov chains, elementary topics in queueing theory and some mathematical aspects of Monte Carlo simulation, including random variate generation, variance reduction and output analysis. Prereq: either MATH 3800 or 4810 and some programming experience. Offered every third semester.

MATH 5793-3. Discrete Math Modeling. This course will focus on the use of discrete modeling to solve problems in a wide variety of disciplines. Applications will be selected from computer science, communication networks, economics, operations research, and the social, biological and environmental sciences. Graph theory and combinatorics are the basic mathematical tools. Prereq: MATH 4408 and 3191. Offered every third semester.

MATH 5803-3. Problem Solving and Mathematics for Professional Teachers I. Designed for professional teachers who teach mathematics as part of their assignment. Emphasis is on the topics of arithmetic and the mathematics encountered in teaching. The instruction is developed around models of the mathematical notions with emphasis on techniques of problem solving. Instruction on the use of computers and calculators is integrated into the course. But no previous programming experience is presumed. Consent of instructor required.

MATH 5804-3. Topics in Mathematics for Teachers. Designed for teachers who teach mathematics as part of their assignment. Topics may vary, but include number theory, finite mathematics, geometry, probability and statistics. Emphasis on hands-on learning and relevance to school mathematics. Consent of instructor required.

MATH 5950-1 to 6. Master's Thesis. This course is only for students writing a master's thesis.

MATH 5960-1 to 8. Master's Project.

MATH 6012-3. Theory of Numbers II. Divisibility, congruences, law of quadratic reciprocity, Gaussian integers, arithmetic and factorization in quadratic fields and applications of factorization theory to Diophantine equations. Prereq: 5011 or 5113. Offered infrequently.


MATH 6131-3. Introduction to Real Analysis. Zorn's lemma, metric and normed linear spaces, completions, continuous functions, Riemann-Stieltjes and Lebesque integration, measure theory. Prereq: MATH 4320 or 5070 or consent of instructor. Offered every Fall semester.

MATH 6221-3. Projective Geometry I. Advanced topics in projective geometry. Topics may include finite projective planes, free projective planes, derivation, collineation groups, higher dimensional projective spaces, ovals and ovoids. Prereq: MATH 4220 and 3191 and MATH 3010 or 3140. Offered infrequently.

MATH 6222-3. Projective Geometry II. Advanced topics in projective geometry. Topics may include finite projective planes, free projective planes, derivation, collineation groups, higher dimensional projective spaces, ovals and ovoids. Prereq: MATH 6221. Offered infrequently.


MATH 6381-3. Mathematical Statistics I. Mathematical theory of statistics. Topics covered will include discrete and continuous probability models, estimation and testing of hypotheses, multivariate analysis, nonparametric inference. Prereq: MATH 3191 and 4820 or consent of instructor. Offered every other year.
MATH 6382-3. Mathematical Statistics II. Mathematical theory of statistics. Topics covered will include estimation and testing hypotheses, multivariate analysis, nonparametric inference. Prereq: MATH 6381. Offered every other year.

MATH 6385. Stochastic Processes I. Markov chains in discrete and continuous time, renewal theory, queueing theory, introduction to computational probability and simulation. Prereq: MATH 4810 or 5310 and 5718 and one of: MATH 3200, 5662 or 6743. Offered infrequently.

MATH 6388-3. Statistical Methods in Research II. A two-semester course in applied statistics. Topics include design and analysis of experiments, linear and nonlinear models, analysis of variance and covariance, failure of assumptions, robust methods, exploratory data analysis. Emphasis is on the practical aspects of applying statistical techniques to the analysis of data in business, engineering and the behavioral, biological, and physical sciences. Prereq: MATH 5387 or consent of instructor. Offered every other year.

MATH 6394-3. Experimental Designs. Regression models, response surface methodology, experimental designs and life testing techniques. Prereq: MATH 5388 or consent of instructor. Offered once every three years.

MATH 6395-3. Multivariate methods. Multivariate hypothesis testing and estimation, multivariate analysis of variance, factor analysis, multidimensional scaling, and principal components. Prereq: MATH 5382 or consent of instructor. Offered once every three years.

MATH 6397-3. Non-Parametric Statistics. Statistical inference without strong model assumptions. Hypothesis testing and estimation using permutations and ranks, nonparametric model fitting and analysis of variance. Prereq: MATH 5387 or consent of instructor. Offered once every three years.


MATH 6409-3. Applied Combinatorics. (C SC 5141.) Major emphasis is on applied combinatorics and graph and combinatorial algorithms with applications in computer science and operations research. Topics include general counting methods, generating functions, recurrence relations, inclusion-exclusion, Pólya's enumeration theory, and network algorithms. Prereq: consent of instructor. Offered Spring semester of odd years.

MATH 6420-3. Applied Algebra. Study of those topics in algebra with applications in computer science. Topics will include: groups, rings, field, and Boolean algebras with applications to combinatorial and sequential networks, languages, automata and codes. Prereq: any abstract algebra.


MATH 6698-3. Multigrid Methods I. Multigrid methods are fairly sophisticated techniques for efficient solution of many large scale computational problems, most notably partial differential equations. This course will provide a thorough introduction to basic multigrid principles followed by an introduction to more advanced applications. Prereq: consent of instructor. Offered infrequently.

MATH 6733-3. Partial Differential Equations I. General theory of partial differential equations; first order equations; classification of second order equations; theory and methods of solution of elliptic, parabolic, and hyperbolic types of equations; maximum principles; Green's functions; potential theory; and miscellaneous special topics. Prereq: MATH 3200, 4320. Offered every Spring semester.

MATH 6734-3. Partial Differential Equations II. General theory of partial differential equations; first order equations; classification of second order equations; theory and methods of solution of elliptic, parabolic, and hyperbolic types of equations; maximum principles; Green's functions; potential theory; and miscellaneous special topics. Prereq: MATH 6733. Offered infrequently.

MATH 6741-3. Calculus of Variations I. Classical necessary and sufficient conditions with emphasis on the simplest problems; the problem of Lagrange, and the problem of optimal control. Direct methods and applications. Prereq: MATH 4320 and 6743. Offered infrequently.

MATH 6742-3. Calculus of Variations II. Classical necessary and sufficient conditions with emphasis on the simplest problems; the problem of Lagrange, and the problem of optimal control. Direct methods and applications. Prereq: MATH 6741. Offered infrequently.


MATH 6909-1 to 8. Master's Project. Offered infrequently.


MATH 7223-3. Introduction to Differential Geometry I. Differential forms in euclidian-3-space, frame fields, ferenet formulas, calculus of differential forms on surfaces, extrinsic and intrinsic geometry of surfaces. Riemannian geometry of different manifolds, geodesics, curvature, the Gauss-Bonnet theorem. Prereq: consent of instructor. Offered infrequently.

MATH 7224-3. Introduction to Differential Geometry II. Differential forms in euclidian-3-space, frame fields, ferenet formulas, calculus of differential forms on surfaces, extrinsic and intrinsic geometry of surfaces. Riemannian geometry of different manifolds, geodesics, curvature, the Gauss-Bonnet theorem. Prereq: MATH 7223. Offered infrequently.


MATH 7594-3. Integer Programming. This course covers aspects of integer programming including polyhedral theory, valid inequalities, superadditive duality and algorithms for integer programming. Prereq: MATH 5593.

MATH 7664-3. Iterative Methods in Numerical Linear Algebra. This course will describe iterative methods for the solution of large sparse linear systems of equations. The course will stress two concepts, preconditioning and polynomial acceleration. Prereq: MATH 6664 or consent of instructor. Offered every other year.


The following six reading courses are offered regularly, primarily for Ph.D. students who have reached the research level in the designated fields. The seminar format of these courses requires significant student participation. Prereq: consent of instructor.

MATH 7921-1 to 3. Readings in Mathematics of Science and Engineering.

MATH 7922-1 to 3. Readings in Mathematical Foundations of Computer Science.

MATH 7923-1 to 3. Readings in Discrete Mathematics.

MATH 7924-1 to 3. Readings in Computational Mathematics.

MATH 7925-1 to 3. Readings in Operations Research.

MATH 7926-1 to 3. Readings in Applied Statistics.

MATH 8990-1 to 10. Doctoral Dissertation. This course is only for students working on their Ph.D. research.

INDEPENDENT STUDY MATH 5840-1 to 3. Independent study. (Graduate). Available only through the approval of the graduate advisor. Subjects arranged to fit the needs of the particular students.

MATH 6840-1 to 3. Independent study.

MODERN LANGUAGES, DEPARTMENT OF

Chair: Francisco Armando Rios
Office: CN 206A
Telephone: 556-4893
French Faculty: Associate Professor: Blandine M. Hart
Assistant Professors: Diane M. Dansereau, Kevin C. O'Neill
German Faculty: Associate Professors: M. Kent Casper, Carsten E. Seecamp
Instructor: Timothy Phillips
Spanish Faculty: Associate Professors: Francisco A. Rios, Donald L. Schmidt
Assistant Professors: Kimberly A. Habegger
Instructor: Griselda Ramos-Perea
Instructor Attendant Rank: Danny E. Martinez

The Department of Modern Languages includes Chinese, French, German, Russian, and Spanish. Majors and minors are available in all but Chinese and Russian. The Department recommends that majors and minors include some study abroad while they are fulfilling their degree requirements at CU-Denver. Credit earned abroad will normally count toward satisfaction of the major and minor requirements at CU-Denver, but, to assure full transfer of credit, students should see an advisor in the Department before enrolling in programs abroad. Courses taken abroad and designated as upper-division in French, German, or Spanish are subject to the 48-hour maximum of credit hours from a single discipline in the College.

An Honors program leading to graduation cum laude, magna cum laude, or summa cum laude, is available to all qualified majors in French, German, and Spanish. Please see a departmental advisor for details.

In addition to fulfilling the major and minor requirements, courses in the Department of Modern Languages prepare students in language, literature, and civilization of France, Germany, Spain, and Spanish America. Certain courses in each language apply to the fulfillment of Core Curriculum requirements in the College of Liberal Arts and Sciences. Other courses lead to a secondary-school teaching certificate, the Master of Humanities degree, and the Master of Arts degree in bilingual education at CU-Denver and to the Master of Arts degree in French and Spanish offered on the Boulder campus. Only courses numbered 5000 and above apply to the master's degree; students enrolled in a master's program in Boulder should consult with their advisor before enrolling in courses on the Denver campus.

Outcomes Assessment

As part of its Outcomes Assessment Plan, the Department of Modern Languages requires that all graduating seniors demonstrate oral and written proficiency in their language through an examination administered by the department. Prospective majors should see their departmental advisors as soon as possible for more information.

Foreign Language Requirement

Students who have completed a Level III high school course in a second language have satisfied the College requirement in foreign language. This requirement may also be satisfied by completion of a third-semester course in Chinese, French, German, Russian, or Spanish with a minimum grade of C (2.0) or through demonstration of equivalent proficiency by examination.

Students who have studied a second language in high school and who wish to continue with the language will be placed according to their high school record and verbal SAT or ACT score, but they may not receive credit for a course lower than the one in which they have been placed. For a complete statement of policy on foreign language placement and credit, see the statement on foreign language that is available from the College Advising Office.

Programs of Study

CHINESE

CHIN 1010-5. Beginning Chinese I. A basic introduction to Chinese language and culture. Students will study pronunciation, vocabulary, grammar, and simple writing techniques. Prereq: none. Students who have studied Chinese prior to enrolling at CU-Denver should consult...
with a department advisor before enrolling in CHIN 1010.

**CHIN 1020-5. Beginning Chinese II.** Continuation of CHIN 1010. Further practice of pronunciation, and study of vocabulary, grammar, and simple writing techniques. Prereq: CHIN 1010 or placement.

**CHIN 2110-5. Second Year Chinese I.** Continuation of the development of reading, speaking, and writing skills in practical Chinese, with grammar review and introduction of the Chinese dictionary. In addition to contemporary Chinese, there will be some emphasis on Chinese classical materials, such as proverbs. Prereq: CHIN 1020 or placement by exam.

**CHIN 2120-5. Second Year Chinese II.** Continuation of CHIN 2110. Prereq: CHIN 2110 or placement by exam. CHIN 2120 satisfies the fourth semester language requirement at most graduate schools.

**CHIN 2840-1 to 3. Independent Study.**

**CHIN 2980-3. Survey of Chinese Literature.** Survey of Chinese literature will help students who are learning Chinese language or are interested in Chinese culture to gain an understanding and appreciation of Chinese history, literature, art, thought and culture. Taught in English.

**CHIN 3840-1 to 3. Independent Study.**

**CHIN 3939-1 to 3. Internship/Cooperative Education.**

**FRENCH**

**Undergraduate**

The French program offers a variety of courses for students interested in French language, literature, civilization, and culture. Two options are available for the major, and two for the minor.

**Requirements for the Major.** Students majoring in French must complete a minimum of 36 semester hours beyond first-year proficiency. Students presenting four years of high school French for admission must complete 30 hours beyond the second year. At least 18 credit hours of upper-division work must be taken from the faculty in French at CU-Denver. Courses taken at other institutions while a student is enrolled at CU-Denver may be applied to the major only with departmental approval prior to enrollment in those courses. No courses taken on a pass/fail basis may be credited toward the major, and no grade of less than C may be credited toward the major. Upon declaring a major in French, each student will be assigned a faculty advisor with whom the student should consult at least once per semester thereafter. It is especially important that students have their transcripts reviewed by their advisor prior to enrolling in their final 30 credit hours at CU-Denver. Failure to do so may result in delay of graduation. Students majoring in French may choose between the following options:

- **Option A: Literature.** Required courses are: FR 2110 and 2120 or 2130; 3010 and 3020; 3112 and 3122; 3050 and 4010; and a minimum of 6 hours of French literature courses at the 4000-level. Any elective taken should be at the 3000- or 4000-level.

- **Option B: Culture and Civilization.** Required courses are: FR 2110 and 2120 or 2130; 3010 and 3020, 3112 or 3122, 3050 and 4010, 3202, 4200 and 4210. Any elective taken should be at the 3000- or 4000-level.

**Requirements for the Minor.** A total of 21 credit hours beyond FR 1020 is required. At least 9 credit hours of upper-division work must be taken from the faculty in French at CU-Denver. Courses taken at other institutions while a student is enrolled at CU-Denver may be applied to the minor only with departmental approval prior to enrollment in those courses. No courses taken on a pass/fail basis may be credited toward the minor, and no grade of less than C may be credited toward the minor.

Students may choose a French minor with an oral emphasis or a written emphasis.

- **Required courses for the Oral emphasis include FR 2110, 2120 or 2130, 3010, 3020, 3202, and 6 hours of electives at or above the 2000 level. Requirements for the written emphasis include FR 2110, 2120 or 2130, 3050, 3112, 3122, and 6 hours of electives at or above the 2000-level.**

Students planning to acquire certification for teaching French at the secondary level are required to take FR 4960, Methods of Teaching Modern Languages. (This course does not count as part of the 36 hours required for the major.) Also, prior to enrolling in student teaching with the School of Education, the student must demonstrate oral and written proficiency in French through an examination administered by the Department of Modern Languages. The student should see an advisor in French for details.

Students must see the department advisor prior to registration for 3000-level courses. Since all courses are not offered every year, it is extremely important for students to plan their schedules in advance to avoid a delay in graduation.

Students majoring in French must satisfy the requirements of the College of Liberal Arts and Sciences.

**Graduate**

At present CU-Denver offers no French courses above 5999. The courses at the 5000 level are applicable to an M.A. degree through the University of Colorado at Boulder and to the Master of Humanities program at CU-Denver, depending upon degree plan approval by the appropriate graduate advisor.

**COURSES**

**FR 1010-5. Beginning French I.** An introductory course for beginners, designed to teach comprehension, speech, reading, and writing in French. Basic grammatical and syntactic structures are introduced, together with an elementary vocabulary that allows the student to formulate simple questions and answers. Prereq: no previous study of French. Students who have had French in high school or elsewhere should consult with an advisor in order to avoid loss of credit.

**FR 1020-5. Beginning French II.** Continuation of FR 1010. More complex grammatical and syntactic structures are introduced and the elementary vocabulary is expanded to enable the student to carry on short conversations in French. Cultural items of special interest are added by the instructor. Prereq: FR 1010 or placement by exam.

**FR 2110-3. Conversation and Culture.** Designed to: 1) develop skills in listening, speaking, and reading; and 2) give the student an introduction to French contemporary culture. It provides: 1) cultural readings that reflect the customs, thoughts, and everyday life of the French people; and 2) activities intended to increase communication skills. Emphasis is on conversation, but there is also a review of grammar. Prereq: FR 1020 or placement by exam.

**FR 2120-3. Reading and Composition.** Focuses on developing skills in reading and writing, and includes grammar review. The reader provides a variety of French short stories designed for the intermediate level. Students are asked to express their reactions to the stories and to write compositions based on the texts studied or on related subjects. Prereq: FR 1020 or placement by exam.
FR 2130-3. Current Topics of the French Speaking World. Intended for those majoring or minoring in the international affairs program, but is open to all those wanting to take a fourth semester language course in French to satisfy a fourth semester language requirement or to qualify for continuation into upper division French courses. Increased mastery of oral and written French is a primary objective. This course combines discussion and writing on political, economic, and social conditions in contemporary France with grammar review. Articles from current French newspapers, news magazines, and television broadcasts are analyzed for a better understanding of how the French see themselves and the world. FR 2130 satisfies the language requirement for the minor in international affairs, may be applied toward the major or minor in French and will satisfy the fourth semester foreign language requirement at most graduate schools. Prereq: FR 2110 and 2120 or 2130 or consent of instructor.

FR 3122-3. Main Currents of French Literature II. Introductory survey of the major literary trends (Romanticism, Realism, Existentialism, etc.) and writers of the 19th and 20th centuries. Students become acquainted with prominent writers of the period such as Hugo, Balzac, Stendhal, Flaubert, Proust, Gide, Camus, Sartre. Prereq: FR 2110 and 2120 or 2130 or consent of instructor.

FR 3202-3. France in the 20th Century. Combines a number of themes of permanent relevance (education, the family, justice, communication, the arts, etc.) with issues of current interest in the French-speaking world (urban renewal, immigrant workers, anti-semitism, French-Canadian nationalism, the independentist movement in New Caledonia, Nouvelle Cuisine, etc.). Prereq: FR 2110 and 2120 or 2130 or consent of instructor.

FR 3939-1 to 3. Internship/Cooperative Education. 4130-3. Advanced Composition. Improvement of writing skills and development of the student's ability to compose logically and convincingly. Stresses difficult grammar points (subjunctive, conditional, passive, etc.) and idiomatic expressions. The technique of exlication de textes will be studied. Prereq: FR 3050 or consent of instructor.

FR 4050-3. Advanced French for Business. Concentrates on the technical language necessary to meet the economic and commercial needs of the modern world. Prepares students for the practical certificate of business and economic French of the Paris Chamber of Commerce. Prereq: FR 3050 and 4010 or at least 8 French courses beyond the first year or consent of the French advisor. FR 4010 may be taken concurrently with FR 4050.

FR 4200-3. French Civilization to 1789. Development of French culture and civilization from a historical perspective, beginning with the origins of France and ending with the reign of Louis XIV in 1789. The following topics are covered: historical background, sciences and techniques, daily life, the arts, literature and philosophy, and religion. Prereq: FR 3020 and 3202, or 3020 or 3112, or consent of instructor.

FR 4210-3. French Civilization from 1789. Continuation of FR 4200. The development of French culture and civilization in a historical perspective from the beginning of the Revolution to the present. The following topics are covered: historical background, sciences and techniques, daily life, the arts, literature and philosophy, and religion. Prereq: FR 3020 and 3202, or 3020 or 3112, or consent of instructor.

FR 4310/5310-3. Seventeenth Century Literature. In-depth study of the century considered to be the pinnacle of French theater. Includes plays by Racine, Moliere, and Corneille as well as poetry by La Fontaine and Boileau. Prereq for FR 4310: FR 3112 and 3122 or consent of instructor; for FR 5310: graduate standing in French. The course is open to qualifying undergraduate seniors.

FR 4360/5360-3. Eighteenth Century Novel, Theater, and Poetry. The study of several novels and plays characteristic of the 18th century as well as some of the more famous poems. Includes Diderot, Rousseau, Voltaire, Marivaux, and Laclos. Prereq: FR 4360: FR 3112 and 3122 or consent of instructor; for FR 5360: graduate standing in French. The course is open to qualifying undergraduate seniors.

FR 4430/5430-3. Nineteenth Century French Novel. Development of the French novel during the 19th century. Includes such writers as Stendhal, Hugo, Balzac, George Sand, Flaubert, Maupassant, and Zola. Prereq for FR 4430: FR 3112 and 3122 or consent of instructor; for FR 5430: graduate standing in French. The course is open to qualifying undergraduate seniors.

FR 4490/5490-3. Twentieth Century French Novel. Representative novels of the 20th century, a period of great innovation in the French novel. Authors generally treated are Proust, Gide, Sarrute, Beckett, and Duras. Prereq for FR 4490: FR 3112 and 3122, or consent of instructor; for FR 5490: graduate standing in French. The course is open to qualifying undergraduate seniors.

FR 4490/5490-3. Twentieth Century French Theater. A survey of the major movements in French literature of the 20th century as represented in the theater arts. Such authors as Jarry, Artaud, Apollinaire, Giraudoux, Sartre, and Beckett will be discussed. Prereq for FR 4490: FR 3050 and 3122 or consent of instructor; for FR 5490: graduate standing in French.

in French. The course is open to qualified undergraduate seniors.


FR 4690/5690-3. Methods of Teaching Modern Languages. Requirement for language majors in the teacher certification program, school of education, CU-Denver. Normally taken immediately prior to student teaching. Methodology of teaching French, German, and Spanish in an urban setting. Normally students should have completed all other requirements for the major.


GERM 5939-1 to 6. Cooperative Education. Independent Study

FR 4840-1 to 3. Independent Study. (Upper division.)
FR 5840-1 to 3. Independent Study. (Graduate level I.)

GERMAN

Undergraduate

The German program provides a variety of courses for students interested in German language, literature, history, philosophy, music, and art. The curriculum contains essentially three course clusters: basic language-skills courses, from beginning through advanced levels; upper-division literature courses taught in German; and German area-studies courses taught in English with readings in English translation.

Requirements for the Major. Students majoring in German must complete 36 hours beyond first-year proficiency. Not more than 9 hours may be taken on the second-year level toward the major.

Course work successfully completed at other institutions will be evaluated for credit transfer, but a minimum of 18 hours of upper-division credits must be taken from the faculty in German at CU-Denver. Courses taken at other institutions while a student is enrolled at CU-Denver may be applied to the major only with departmental approval before enrollment in those courses.

Upon declaring a major in German, each student will be assigned a faculty advisor with whom the student should consult at least once per semester thereafter. It is especially important that students have their transcripts reviewed by their advisor before enrolling in their final 30 credit hours at CU-Denver. Failure to do so may result in delay of graduation.

No courses taken on a pass/fail basis may be credited toward the major, and no grade of less than C may be credited toward the major. Majors must maintain a B average in German. Required courses for the major are GER 3010-3020, the 6-hour sequence in German Civilization (or Introduction to German Literature), and 3 units at the 4000 level. German majors are encouraged to take German area-studies courses, but these courses may not count toward the major unless some of the readings and written assignments are done in German. Majors should consult with the instructor on this requirement. Students planning to acquire certification for teaching German at the secondary level are required to take GER 4960, Methods of Teaching Modern Languages. Also, before enrolling in student teaching with the School of Education, the student must demonstrate oral and written proficiency in German through an examination administered by the Department of Modern Languages. See your advisor in German for details.

Requirements for the Minor. Students with a minor in German must complete 21 semester hours beyond GER 1020. At least 9 credit hours at the upper-division level must be taken from the faculty in German at CU-Denver. Courses taken at other institutions while a student is enrolled at CU-Denver may be applied to the minor only with departmental approval before enrollment in those courses. No courses taken on a pass/fail basis may be credited toward the minor, and no grade of less than C may be credited toward the minor. Courses are to be distributed as follows:

- 2000 level—a minimum of any two courses is required before a student may take upper-division courses.
- 3000 level—GER 3010 and 3020 are required.

The remaining 9 hours are electives of which at least 6 hours must be taken at the 3000 or 4000 level.

COURSES

GER 1010-5. Beginning German I. Introduction to basic grammar, sentence structure, and speech patterns.

GER 1020-5. Beginning German II. Continuation of GER 1010. Prereq: GER 1010 or one year of high school German.

GER 2110-3. Practical Everyday German. Stresses developing conversational ability in the kind of language one would encounter in normal everyday situations in Germany. Prereq: GER 1020 or two years of high school German.

GER 2120-3. Conversation and Culture. Topics for discussion in German will acquaint students with interesting aspects of German culture; readings offer culture; readings offer a kaleidoscopic sampling from both the past and the present. Prereq: GER 1020 or two years of high school German.

GER 2130-3. Current Topics of the German-Speaking World. A fourth semester course designed for those majoring in modern German minoring in international affairs; open to all those wanting to satisfy a fourth semester language requirement to qualify for upper division German courses. Along with grammar review, the course deals with contemporary topics in cultural, political, economic and social affairs. This course satisfies the language requirement for the major in international affairs, may be applied for the major and minor in German, and will satisfy the fourth semester foreign language requirement at most foreign schools.

GER 2110 or 2120 or placement by exam or consent of instructor.

GER 2210-3. Readings and Translation. Stresses reading and translation skills rather than speaking. Students work with short German texts in a variety of areas: natural and social sciences, history, literature, etc. Lectures in English. Prereq: GER 1020.

GER 3010-3. Advanced Conversation and Grammar. Emphasis on developing conversational ability with more complicated idiomatic and structural elements. Reading normally from contemporary periodicals, newspapers, and literature. Prereq: GER 2110 or 2120 or consent of instructor.

GER 3020-3. Advanced Conversation and Composition. Continuation of GER 3010 with stress on written expression. Prereq: GER 3010 or consent of instructor.

GER 3939-1 to 3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: junior standing and 2.75 grade-point average.

GER 4010-3. Idiom and Stylistics I. Analysis of and practice with more complex German usage in descriptive, literary, and scientific texts. Emphasis on increasing understanding of refinements in style and idiom.
GER 4020-3. Idiom and Stylistics II. Continuation of GER 4010. Literature in German
GER 3110-3. Introduction to German Literature I. Selected readings from German short stories, dramas, and poetry, primarily from the modern period. Emphasis on techniques of reading. Conducted in German. Prereq: GER 2110 or 2120 or consent of instructor.
GER 3120-3. Introduction to German Literature II. Selected readings from German literature with emphasis on literary styles and movements and relationship to larger cultural patterns. Conducted in German. Prereq: GER 2110 or 2120, or consent of instructor.
GER 3330-3. German Classical Literature. The age of Idealism prior to Romanticism will be explored through the writings of Lessing, Goethe, Schiller, Wieland, et al., and through lectures on the historical, philosophical, and social components of the times. Includes some treatment of classical German music. Conducted in German. Prereq: any third-level German course.
GER 4110-3. Issues and Currents in Modern German Literature. The focus topic will vary, concentrating on a given theme or problem area in the 20th century (e.g., modern transformations of the Faust figure, the modern drama of revolution, the new man of expressionism, etc.). Conducted in German. Prereq: at least one third-level literature course in German.
GER 4120-3. Issues and Currents in 18th- and 19th-Century German. Format similar to GER 4110. Topical focus varies with each offering (e.g., the symbolism of Goethe's poetry, the fairy-tale pattern in the romantic tale, Schiller's aesthetics in theory and drama, etc.). Conducted in German. Prereq: at least one third-level literature course in German.

German Area Studies in English Translations

Note: Courses conducted in English with text in English translation. Credit toward German major is given if some work (to be specified by the instructor) is done in German.

GER 2520/3520-3. German Romanticism and the Modern Spirit. Exploration of the modern works of modern German Romanticism. Conducted in German. Prereq: GER 2110 or 2120, or consent of instructor.
GER 3532-3. German Civilization I: From Medieval Through Age of Idealism. Selected highlights of major cultural aspects of the Middle Ages, the Reformation, the Enlightenment, and the Age of Idealism.
GER 3540-3. German Civilization II: The Modern Age. Selected highlights of major cultural aspects of the later 19th century, the Wilhelminian period, the Weimar Republic, the Third Reich, and the period since 1945.

GER 4942-3. Seminar: Literature and the Visual Art. Interdisciplinary, team-taught course with fine arts department. Topical focus varies with each offering. Investigation of literature and painting, sculpture, architecture within a given period or movement. (e.g., romanticism, symbolism, surrealism, etc.).
GER 5939-1 to 6. Cooperative Education.

Independent Study
GER 2840-1 to 3. Independent Study. GER 3840-1 to 3. Independent Study. GER 4840-1 to 3. Independent Study. (Upper division.)
GER 5840-1 to 3. Independent Study. (Graduate level 1.)

RUSSIAN

RUSS 1010-5. Beginning Russian I. Introductory course designed to teach all four language skills: speaking, listening, reading and writing. Basic grammatical structures are introduced together with an elementary vocabulary that enables the students to formulate simple questions and answers. Classroom activities will emphasize the development of speaking skills through spontaneous interaction and natural communication between students. An overview of selected aspects of Russian culture is incorporated into the course through films, songs, cartoons, games, and guest speakers. Prereq: students who have studied Russian before should consult with a department advisor prior to enrolling.

RUSS 1020-5. Beginning Russian II. This course is a continuation of RUSS 1010. More advanced grammatical structures are introduced and the elementary vocabulary is expanded to further develop all four language skills: speaking, listening, reading and writing. The conversation skills are emphasized in the classroom through spontaneous interaction and dramatic scenes staged by the students. An overview of selected aspects of Russian culture and history is incorporated into the course through films, songs, cartoons, games and anecdotes.

RUSS 2110-3. Second Year Russian I. All basic grammatical structures of both written and spoken Russian will be completed in this course. This will allow the students to write simple compositions and to carry on short conversations in Russian. Classroom activities focus on practicing conversation skills through the students' natural exchanges and creative dialogues. Presentation of some aspects of Russian culture and history will be continued using a multi-media approach: video films, newspaper articles, personal letters.
RUSS 2130-3. Current Topics in the Russian Speaking World. Fourth semester course designed for those majoring in international affairs but also open to those who want a fourth semester language course. Along with grammar review, the course deals with contemporary topics in Soviet cultural, political and social affairs, using a multi-media approach. This includes watching latest Russian films and current Soviet TV newscasts received by satellite. This course is a participant in LCEN—Listening Comprehension Exercise Network. LCEN creates listening exercises keyed to the current Soviet TV newscasts and distributes them to participants. These materials, as well as other authentic texts, will be used to develop all language skills: comprehension, speaking, reading and writing.

RUSS 3202-3. Russian Culture, Civilization and Language. Development of Russian culture and national character, particularly as reflected in the structure of the Russian language, folk tales, literature, and philosophical writings. Other topics to be covered include: traditions and national customs; the role of the orthodox church; the role of women; urban and rural daily life; education; visual and performing arts; and secular and sacred music.

RUSS 3939-1 to 3. Internship/Cooperative Education.

RUSS 4840-1 to 3. Independent Study.

RUSS 5939-1 to 6. Cooperative Education.

SPANISH

Undergraduate

The Spanish program studies the language, literature, culture, and civilization of Spain, Spanish America, and the Spanish-speaking areas of the U.S.

Requirements for the Major. A major in Spanish consists of the following requirements:

GENERAL REQUIREMENTS

1. A minimum of 30 credit hours and a maximum of 48 credit hours of upper-division course work (3000 and above) in Spanish. None of the required hours may be taken on a pass/fail basis, and no grade of less than C (2.0) may be credited toward the major. Courses taken at other institutions while a student is enrolled at CU-Denver may be applied to the major only with departmental approval before enrollment in those courses.

2. 12 credit hours at the 4000 level.

3. In addition to the 30 credit hours in Spanish, 6 credit hours from one or more of the following related fields: (a) Latin American studies (anthropology, archaeology, Mesoamerican art, geography, history, political science); (b) Hispanic American studies; (c) linguistics; (d) upper-division courses in another required foreign language or comparative literature; (e) cross-cultural studies.

4. 18 credit hours in Spanish at the upper-division level must be taken from the faculty of the University of Colorado at Denver.

SPECIFIC REQUIREMENTS

1. 15 credit hours in courses in literature and culture/civilization, to be distributed as follows: (a) Introduction to the Study of Literature; (b) 3 credit hours in culture/civilization; (c) 3 credit hours in Spanish Pentangular Literature; (d) 3 credit hours in Spanish American literature; and (e) one course on the period before 1800.

2. 9 credit hours in language skills and theory.

3. 6 credit hours in upper-division electives in Spanish.

Students seeking certification as Spanish teachers at the secondary level should take SPAN 4960, Methods of Teaching Modern Languages, taught in English, but for major credit in Spanish. Also, before enrolling in student teaching with the School of Education, students must demonstrate oral and written proficiency in Spanish through an examination administered by the Department of Modern Languages. Please see an advisor in Spanish for details.

Upon declaring a major in Spanish, each student will be assigned a faculty advisor, with whom the student should consult every semester to avoid delays in graduation. It is important that departmental advisors review student transcripts before students enroll in their final 30 credit hours at CU-Denver. Students who are considering graduate school, at CU-Denver or elsewhere, should see an advisor as early as possible, since admission depends largely on courses taken in the undergraduate major.

Requirements for the Minor. 21 credit hours beyond SPAN 1020, including 15 credit hours at the upper division level in Spanish. 9 credit hours at the upper division level must be taken from the faculty in Spanish at CU-Denver. None of the required credit hours may be taken on a pass/fail basis, and no grade of less than C (2.0) may be credited toward the minor. Courses taken at other institutions while a student is enrolled at CU-Denver may be applied to the minor only with departmental approval before enrollment in those courses. Each student with a minor in Spanish shall meet the distribution requirements as follows:

1. Two courses in language skills and theory at the upper-division level.

2. One course in culture/civilization at the upper-division level. (To assure credit for these courses, natives of Hispanic countries must consult a Spanish advisor before enrolling).

3. 6 credit hours of upper-division electives in Spanish.

Graduate

CU-Denver offers no Spanish courses above 5999. Courses at the 5000 level apply to an M.A. degree in Spanish from the University of Colorado at Boulder and to a Master of Humanities degree from CU-Denver, depending upon approval by the graduate advisor. Students enrolled in a master's program in Boulder should consult their graduate advisors before enrolling in courses on the Denver campus.

Courses

SPAN 1010-5. Beginning Spanish I.

Intended for students with no previous study of Spanish. Introduction to basic Spanish pronunciation and grammar, useful vocabulary and idioms. Readings and class discussions relating to the Hispanic world. Additional work in the language lab is required. Prereq: no previous study of Spanish. Students having studied Spanish previously should not enroll in SPAN 1010 without first consulting a department advisor.

SPAN 1011/1021-5. Intensive Spanish.

Offered only during the Summer term. SPAN 1011/1021 combines both semesters of the first year, and meets the needs of highly motivated students of the language and culture. The class is conducted entirely in Spanish. Prereq: no previous study of Spanish. Students having studied Spanish previously should not enroll in SPAN 1011/1021 without first consulting a department advisor.

SPAN 1020-5. Beginning Spanish II.

Continuation of SPAN 1010. Further development of listening, speaking, reading, and writing skills. Additional work in the language lab is required. Prereq: SPAN 1010 or placement by exam.

SPAN 2110-3. Second Year Spanish I.

Continues the development of skills acquired in 1010 and 1020. Readings deal with Hispanic culture and current topics from Spain and Latin America. Development of informal oral and written expression. Prereq: SPAN 1020 or placement by examination.
SPAN 2120-3. Second Year Spanish II. Continues the development of skills acquired in SPAN 1010, 1020, and 2110 together with a review of grammar. Readings deal with Hispanic culture and literature. Development of informal oral and written expression. SPAN 2120 satisfies the fourth semester language requirement at most graduate schools. Prereq: SPAN 2110 or consent of instructor.

SPAN 2130-3. Current Topics in the Spanish-Speaking World. A fourth semester course (parallel to 2120) designed for students majoring or minoring in international affairs, but is open to anyone wishing to continue the study of Spanish beyond 2110. Along with development of language skills and grammar review, class work involves contemporary topics in cultural, political, economic, and social affairs. SPAN 2130 satisfies the fourth semester language requirement at most graduate schools. Prereq: SPAN 2110 or placement exam.

SPAN 3010-3. Advanced Conversation and Composition I. Expansion and reinforcement of oral and written skills in Spanish at an advanced level, in a broad cultural context. Oral activities are individual and in groups. Topics are introduced through oral activities, and are then used for written assignments. Prereq: SPAN 2120 or 2130, or consent of instructor.

SPAN 3020-3. Advanced Conversation and Composition II. Continuation of SPAN 3010. Development of oral and written skills in Spanish in preparation for taking other advanced courses. Topics of increasing complexity are selected from current publications in Spanish. Prereq: SPAN 3010 or consent of instructor.


SPAN 3080-3. Introduction to Translation I. SPAN 3082/3092-3. Introduction to Translation I and II. Two-semester sequence that introduces the methodology and practice of written translation. Thorough analysis of source texts precedes translation into target language. Students must demonstrate third year competence in Spanish and advanced writing skills in English. Prereq: upper division standing in Spanish.

SPAN 3100-3. Culture and Civilization of Spain. Taught in English, no major or minor credit. Survey of the development of Spanish civilization—the social, political, economic, religious, literary, and artistic life of Spain—within the framework of the Western tradition, and its later dissemination in the New World. Prereq: minimum of sophomore standing, or consent of instructor.

SPAN 3112-3. Latin American: A Tradition of Conflict. Equivalent in English of SPAN 3212, for no major or minor credit. Requires no knowledge of Spanish. Based on an interdisciplinary approach to Latin America.

SPAN 3212-3. Spanish American Culture and Civilization. Taught in Spanish for major and minor credit. Survey of the social, political, economic, religious, literary, and artistic life of Spanish America from the conquest to the present. Prereq: SPAN 2120, 2130, or consent of instructor.

SPAN 3222-3. Culture and Civilization of Spain I. From prehistoric times through Phoenician, Greek, Roman, and Visigothic eras to the Moorish invasion in 711. The Arab period; the reconquest. The Catholic kings. The imperial period: Charles V and Phillip II.

SPAN 3222-3. Culture and Civilization of Spain II. Continuation of SPAN 3221. Studies the social, intellectual, and artistic development of Spain from the time of the Bourbons (18th century). Through the Civil War of 1936 and the Franco regime to the restoration of democracy under Juan Carlos I and the present day. Prereq: advanced standing (third-year) in Spanish or consent of instructor.

SPAN 3252-3. Introduction to the Study of Literature. The basic terms and skills needed to analyze both the themes and form of literary works, together with an introduction to research skills. All literary examples come from Hispanic literature. SPAN 3252 is a prerequisite (previous or concurrent) to all other literature courses taught in Spanish. Prereq: SPAN 2120, 2130, or consent of instructor.

SPAN 3300-3. Twentieth Century Spanish Literature. The literature of Spain from the beginnings of the 20th century to the present through short stories, poems, and plays. Prereq or coreq: SPAN 3252.

SPAN 3310-3. Spanish Writing and Grammar I. Structure of the language, and practice in its written use. Particularly advised for those intending to teach Spanish at the secondary level. Prereq: third year Spanish student in good standing (B average).

SPAN 3320-3. Spanish Writing and Grammar II. Continuation of SPAN 3310, with emphasis on the more subtle structures of the language. Prereq: third year Spanish student in good standing (B average).


SPAN 3400-3. Survey of Spanish Literature I. The most important works in the literature of Spain from the early Hispano-Arabic lyric poems through the Golden Age of the 17th century. Prereq or coreq: SPAN 3252, or consent of instructor.

SPAN 3410-3. Survey of Spanish Literature II. The most important works in the literature of Spain from the 18th century to the present. Prereq or coreq: SPAN 3252, or consent of instructor.

SPAN 3500-3. Survey of Spanish American Literature I. The most important works in the literature of Spanish America from pre-Columbian times to the mid-19th century. Prereq or coreq: SPAN 3252, or consent of instructor.

SPAN 3510-3. Survey of Spanish American Literature II. The most important works in the literature of Spanish America from the late 19th century to the present. Prereq or coreq: SPAN 3252, or consent of instructor.

SPAN 3520-3. Contemporary Mexican Literature. The most important trends and selected key works in various genres of Mexican literature from the second World War to the present. Prereq or coreq: SPAN 3252, or consent of instructor.

SPAN 3550-3. Spanish American Short Story. The Spanish American short story from its beginnings in the Romantic period of the 19th century to the present. Prereq or coreq: SPAN 3252, or consent of instructor.

SPAN 3560-3. Spanish American Drama. Plays from throughout Spanish America, dating largely from the beginning of the 20th century to the present. Prereq or coreq: SPAN 3252, or consent of instructor.

SPAN 3570-3. Spanish American Poetry. Poetry in Spanish America from colonial times to the present. Prereq or coreq: SPAN 3252, or consent of instructor.

SPAN 3700-3. Spanish for International Business I. Development of proficiency in oral and written Spanish as used in business and industry throughout the Hispanic world, together with an increased awareness of social, economic, and political conditions affecting business transactions, particularly in long-term operations. Prereq: SPAN 2120 or 2130, or consent of instructor.

SPAN 3710-3. Spanish for International Business II. Continuation of SPAN 3700. Further development of oral and written language proficiency, together with further examination of pertinent social, economic and political conditions of the Hispanic world. Prereq: SPAN 2120...
SPAN 3720-3. Spanish Business Documentation and Correspondence. Complementary to SPAN 3700 and SPAN 3710, with emphasis on the business and technical terminology used for documentation and correspondence in Spain and Spanish America. Prereq: SPAN 2120 or 2130 or consent of instructor. Concurrent enrollment in SPAN 3710 highly recommended.

SPAN 3730-3. Special Topics in Spanish for International Business. Variable topics not otherwise covered sufficiently in regular courses. May be taken more than once, provided that the topic is different each time. Prereq: SPAN 3700 or consent of instructor.

SPAN 3830-3. Topics in Spanish Literature. Taught in English, no major or minor credit. Varying topics in Hispanic literature for students not able to read Spanish well. SPAN 3830 may be taken more than once, provided that the topic is different each time.

SPAN 3930-1 to 3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: junior standing and 2.75 grade-point average.

SPAN 3970-3. Topics in Spanish Literature. Taught in Spanish for major and minor credit. Varying topics in Hispanic literature appropriate to the 3000 level, not otherwise covered by regular courses. SPAN 3970 may be taken more than once, provided that the topic is different each time. Prereq: SPAN 3252, or consent of instructor.

SPAN 4110-3. Contemporary Spanish Literature. Major works published since the Spanish Civil War, which ended in 1939. Prereq: SPAN 3252 and preferably at least one additional course in literature, or consent of instructor.

SPAN 4120-3. Contemporary Spanish American Literature. Major works in various genres published in Latin America since the second World War. Prereq: SPAN 3252 and at least one additional course in Hispanic literature.

SPAN 4150/5150-3. Masterpieces of Spanish Literature. The most enduring works in the literature of Spain across the centuries. Prereq for SPAN 4150: SPAN 3252 and preferably at least one additional course in Hispanic literature; for SPAN 5150: graduate standing in Spanish.

SPAN 4160/5160-3. Masterpieces of Spanish-American Literature. Focuses on a limited number of outstanding works in Spanish American literature across the centuries: Prereq for SPAN 4160: SPAN 3252 and at least one additional course in Hispanic literature; for SPAN 5160: graduate standing in Spanish.

SPAN 4220/5220-3. Modern and Contemporary Literature. Taught in English, no major or minor credit. Varying topics in Spanish literature appropriate to the 3000 level, not otherwise covered by regular courses. SPAN 4220 may be taken more than once, provided that the topic is different each time. Prereq: SPAN 3252, or consent of instructor. Concurrent enrollment in SPAN 3710 highly recommended.

SPAN 4250/5250-3. Mexican Literature. Mexican literature from pre-Columbian times to the present. Prereq for SPAN 4250: SPAN 3252 and at least one additional course in Hispanic literature; for SPAN 5252: graduate standing in Spanish.

SPAN 4300/5300-3. Generation of 1898. Spanish literature from around the turn of the century through the first third of the 20th century, reflecting the deep intellectual and cultural foment occasioned in part by Spain’s loss of the Spanish-American war of 1898. Prereq for SPAN 4300: SPAN 3252 and preferably at least one additional course in literature; for SPAN 5300: graduate standing in Spanish.

SPAN 4400/5400-3. Romanticism in Spain. The Romantic movement in 19th century Spain through plays, poems, essays. Prereq for SPAN 4400: SPAN 3252 and preferably at least one additional course in literature; for SPAN 5400: graduate standing in Spanish.

SPAN 4410/5410-3. Modernism. Examines the first real flowering of Spanish American literature, from about 1880 to 1910. The dominant genres of the period were the short story, the essay and lyric poetry. Readings come from Dario, Jose Enrique Rodolfo, Manuel Gutierrez Najera, Manuel Diaz Rodriguez, and others. Prereq for SPAN 4410: SPAN 3252 and at least one additional course in Hispanic literature; for SPAN 5410: graduate standing in Spanish.

SPAN 4500/5500-3. Nineteenth Century Spanish Novel. The Spanish novel in one of its most productive periods, beginning with Romanticism and carrying through the realist and naturalist movements. Prereq for SPAN 4500: SPAN 3252 and preferably at least one additional course in literature; for SPAN 5500: graduate standing in Spanish.

SPAN 4510/5510-3. Contemporary Spanish-American Novel. The novel in Spanish America since the second World War, the period in which the greatest number and quality of works has been produced. Prereq for SPAN 4510: SPAN 3252 and at least one additional course in Spanish literature; for SPAN 5510: graduate standing in Spanish.

SPAN 4520/5520-3. Golden Age Drama. Spanish drama of the 17th century, in the period of greatest dramatic productivity in the nation’s history. Readings include selections from Lope de Vega, Tirso de Molina, Calderon de la Barca, and others. Prereq for SPAN 4520: SPAN 3252 and at least one additional course in Hispanic literature; for SPAN 5520: graduate standing in Spanish.

SPAN 4530/5530-3. Golden Age Prose: The Novel and Short Story. Outstanding prose works and authors of the Spanish Golden Age, including the romances of chivalry, and the picaresque novel and Cervantes. Prereq for SPAN 4530: SPAN 3252 and at least one additional course in Hispanic literature; for SPAN 5530: graduate standing in Spanish.

SPAN 4620/5620-3. Don Quijote. The complete Don Quijote in Spanish, focusing on its historical, social, and philosophic context, and its role in the emergence of the modern novel. Prereq for SPAN 4620: SPAN 3252 and at least one additional course in literature; for SPAN 5620: graduate standing in Spanish.

SPAN 4690/5690-3. Methods of Teaching Modern Languages. Methodology of teaching French, German, and Spanish in an urban setting; required for language teachers wishing to be certified at the secondary level through the School of Education at CU-Denver. Should be taken immediately before student teaching. Normally students should have completed all other requirements for the major. Prereq for SPAN 5690: graduate standing in Spanish.

SPAN 4970/5970-3. Special Topics. Varying topics in Hispanic literature not otherwise covered by regular courses. SPAN 4970 may be taken more than once, provided that the topic is different each time. Prereq for SPAN 4970: SPAN 3252 and at least one additional course in Hispanic literature; for SPAN 5970: graduate standing in Spanish.


Independent Study

SPAN 3840-1 to 3. Independent Study. Upper Division/Graduate Level

Students enrolled at the 5000 level may expect additional work and evaluation commensurate with graduate standards. At present CU-Denver offers no Spanish courses above 5999. Courses at the 5000 level are applicable to an M.A. degree in Spanish from CU-Boulder and to a Master of Humanities degree from CU-Denver.
PHILOSOPHY

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Faculty: Professor: Frank H. Marsh
Associate Professors: Sally Gadow, Glenn A. Webster, Mark Yarborough
Assistant Professor: Soo-nok Choi, Honi Haber
Adjunct: Sharon Coggan, Georg Gadow, Darryl Mehring, Mark Tanzer, Mary Stevenson

Undergraduate

The philosophy program is recommended to those students whose goal is a liberal arts education in the finest sense. Philosophy is concerned with the most sustained and deeply reflected thoughts of human civilization, with the transmission and evaluation of basic beliefs and values. It is not an easy field of study, but for more than 25 centuries philosophy has been judged the most rewarding by those who seek self-development, intellectual sophistication, and the happiness of a reflective life.

For career preparation, philosophy should be combined with other fields. It is an excellent undergraduate preparation for such fields as law and medicine.

Requirements for the Major: PHIL 1441, 3002, 3022, and at least one upper division course in each of the following four areas:
1. Metaphysics and/or epistemology
2. Ethics and/or social philosophy
3. One philosophical problem or philosopher
4. One course relating philosophy to art, religion, science or history.

General prerequisites (which may vary for some courses) are: 1000-level–none; 2000-level–3 hours; 3000-level–6 hours; 4000-level–9 hours, and 5000-level–12 hours. The prerequisite may be waived with the consent of instructor.

Requirements for the Minor: A minor in philosophy requires 12 hours and is available at CU-Denver. Interested students should contact a department advisor for information.

Graduate

Applicants for admission to The Graduate School for work toward an M.A. or Ph.D. degree with a major in philosophy are expected to have had 18 or more semester hours in undergraduate courses in the subject including history of philosophy. While some course work at the graduate level may be taken at CU-Denver in this discipline, all degree programs must be arranged through the University of Colorado at Boulder.

Students wishing to pursue graduate work in philosophy should note Requirements for Advanced Degrees in this catalog and should obtain from the department a copy of the Graduate Program in Philosophy. The Graduate Record Examination is not required.

Certain special programs exist (M.A. in comparative East/West philosophy and in history and philosophy of science), details of which may be had on request.

Courses

PHIL 1012-3. Introduction to Philosophy: Relationship of the Individual to the World. This is an introductory course in philosophy, in which the main focus is on some of the central questions in any body of philosophic work regarding: theories of reality, the nature of knowledge and its limits, and the nature of the self in the community. A working knowledge of these broad areas of philosophy is essential to the student for informed participation in the resolution of contemporary problems in today's society.

PHIL 1020-3. Introduction to Ethics and Society: The Person and the Community. In this course, the student will study some of the traditional problems in ethics which tend to be focused on individual morality within the larger context of social and political philosophy. Some of the more specific contemporary moral problems will be addressed, such as: AIDS, abortion, famine, and individual rights versus the collective rights of society.

PHIL 1200-3. Philosophy and Society. Systematic discussion and analysis of the philosophic ideas of community, freedom, political power, the nature and role of violence, etc., together with the challenge of war, poverty, and racism to contemporary culture.

PHIL 1300-3. Philosophy and the Physical World. An introduction to philosophy through the consideration of topics and problems related to the physical and biological sciences such as freedom and determinism; mind and body; artificial intelligence; sciences and ethics; current theories of the universe, space, time, matter, energy, causality, etc.

PHIL 1441-3. Introductory Logic. Introduction to deductive logic, covering categorical propositions and syllogism, truth functional logic, and quantification logic.

PHIL 1600-3. Philosophy and Religion. An introduction to philosophy through problems of religion, such as the existence of god, faith and reason, religious language, etc.

PHIL 1630-3. Introductory Topics in Religious Studies. These are topics in religious study as distinct from philosophy of religion. Such topics may range from comparative religion to the history of religion, to more specialized topics such as Jewish thought.

PHIL 1700-3. Philosophy and the Arts. Consideration of philosophic questions involved in the analysis and assessment of artistic experiences and of the objects with which the arts, including the literary arts, are concerned.

PHIL 2200-3. Classical Social Theories. Introductory study of major philosophies of the past in relation to political, economic, and social issues.

PHIL 2210-3. Modern Social Theories. Present social issues, together with theoretical analyses by communist, fascist, and democratic thinkers.


PHIL 3010-3. Medieval Philosophy. History of philosophy from Augustine through Scotus and Ockham, the fifth through the 14th centuries.


PHIL 3150-3. Ethical Theory. Selected problems in classical and contemporary ethical theory.

PHIL 3200-3. Social and Political Philosophy. A nonhistorical, systematic treatment of basic issues in social and political philosophy, with reference to theories of being, knowledge, and human nature.

PHIL 3280-3. Philosophy of Education. Introductory study of major philosophies on the nature and purpose of education.

PHIL 3300-3. Special Topics in Philosophy.

PHIL 3350-3. Metaphysics. Study of major theories of reality, including such problems as the nature of substance, space and time, and universals and particulars.
PHIL 3360-3. Epistemology. Study of major theories of knowledge, including such problems as the problem of perception, and the distinction between belief and knowledge.

PHIL 3400-3. Philosophy of Science. Examination of some major concepts and problems of scientific thought: explanation, confirmation, causality, measurement, and theory construction.

PHIL 3440-3. Introduction to Symbolic Logic. Covers truth, functional, and quantification logical through polyadic first order predicate calculus and theory of identity. Attention is given to such problems in metaphysics as proofs of the completeness and consistency of systems of logic.

PHIL 3500-3. Ideology and Culture-Racism and Sexism. The basic theme of this course will revolve around unmasking the ways in which the overt power relations obtained in society at a particular moment in history are made to seem to be part of the natural, external order of things, thus serving to promote and legitimate racism and sexism.


PHIL 3630-3. Topics in Religious Studies. More advanced course in religious studies as distinct from the philosophy of religion. Religious studies is concerned with the detail and nature of religion in its various manifestations - world religions, sacred texts, rituals, theologies, mythologies, and other beliefs and special experiences. Hence, topics in religious studies may range from detailed examination of particular religious texts, such as the Old Testament or the Koran, to comparative and historical studies of the world religions, to examination of particular themes in religious beliefs, such as mysticism or hope for afterlife, to the psychology of religion.

PHIL 3700-3. Aesthetics. Introduction to major theories of aesthetics and contemporary discussions of problems in aesthetics; i.e., the nature of art, the problem of evaluations in art.

PHIL 3959-1 to 3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: junior standing and 2.75 grade-point average.


PHIL 4100-3. American Philosophy. A study of such major American philosophers as Pierce, James, Dewey, Royce, and Whitehead.

PHIL 4260-3. Philosophy of Law. Consideration of various views of the nature of law, its role in society, and its relation to other disciplines. Investigation of philosophical commitments which underlie and affect legal conceptions and procedures.

PHIL 4370-3. Philosophy of History. Contemporary issues in critical and speculative theory of history, including the problems of methodology, explanation, values, and the relationship between history and social philosophy.

PHIL 4430-3. Logical Theory. Study of problems in the philosophy of logic and mathematics beyond the metatheory in PHIL 3440. Prereq: PHIL 1441 or 3440 or consent of instructor.

PHIL 4460-3. Theories of Human Nature. Consideration of such problems as the changeability and definability of human nature, and the possibility of a science of human nature.

PHIL 4690-3. Senior Major Colloquium. Examination of one or more fundamental, contemporary, philosophical problems.

PHIL 4730-3. Philosophy and Literature. Examination of philosophical concepts and problems presented in works of literature.


PHIL 4980-3. Special Topics in Philosophy.

UPPER DIVISION/GRADUATE LEVEL

Students enrolled at the 5000 level may expect additional work and evaluation commensurate with graduate standards.

PHIL 4200/5200-3. Philosophical Problems and Contemporary Culture. Issues and controversies in contemporary culture, their relation to modern theories of society, and their manifestations in the arts, science and technology, education, religion, and ethics.

PHIL 4242/5242-3. Bioethics. This three-hour credit course, which requires no prerequisites, examines in detail the philosophical foundations of ethical decision making in medicine, biology, and the life sciences. The presuppositions and theoretical implications of various practices, actual and projected, will be examined. Specific areas of inquiry will include: human experimentation in death and dying, genetic engineering, genetic screening, artificial reproduction, in vitro fertilization, organ transplantation, euthanasia, responsibilities of allied health care professionals, confidentiality and truth telling, phychosurgery, use of drugs in behavior modification, and allocation of scarce resources, etc.

PHIL 4300/5300-3. Philosophy of Mind. Consideration of the problems in the philosophy of mind, including the mind-body problem, the problem of our knowledge of other minds, the compatibility of free will and determinism, etc., and discussion of such concepts as action, intention, motive, desire, enjoyment, memory, imagination, dreaming, self-knowledge, etc.

PHIL 4750/5750-3. Introduction to Phenomenology. An examination of the contribution of phenomenology to selected topics in the theory of meaning, philosophy of mind, ontology, epistemology, through a study of several philosophies such as Heidegger, Sartre, and Merleau-Ponty.

GRADUATE LEVEL

Note: All courses at the 5000 level carry the following prerequisites unless otherwise indicated: 12 hours of philosophy or consent of instructor.

PHIL 5000-3. Medieval Philosophy. Covers Western philosophy from Augustine to the 14th century, in the Christian, Jewish, and Islamic traditions.


PHIL 5080-3. Ethics. Representative positions in normative ethics and meta-ethics.

PHIL 5100-3. Topics in the History of Philosophy.

PHIL 5220-3. Social and Political Philosophy. Key theories, problems, and philosophers concerned with such issues as that of human community, the relations of the individual to the community, rights and obligations, human nature, and political organization.

PHIL 5260-3. Philosophy of Law.

PHIL 5340-3. Epistemology. Key contemporary theories and controversies concerning the nature, scope, and limits of human knowledge.

PHIL 5380-3. Metaphysics. Key contemporary theories and controversies concerning the nature of reality.

PHIL 5420-3. Philosophy of Science. Topics connected with development and nature of science, structure of scientific theories, testing of hypotheses. Theory of decisions in science and ethics. Basic conceptions and models of abstractions in history of science.
PHIL 5480-3. Philosophy of Spinoza. Study of the philosophy of this key 17th century continental rationalist.


PHIL 5600-3. Special Topics in Philosophy. Seminars not listed as courses in which the instructor meets regularly with three or more students to discuss special topics in philosophy.


PHIL 5700-3. Aesthetics. An analysis of the principle topics of aesthetics, including such issues as formal structure of aesthetics, the nature of critical judgments, and the status of the work of art.

PHIL 5710-3. Seminar: Comparative Philosophy. A seminar in the problems and literature of relating non-Western philosophical methods, traditions, and results to Western equivalents or para-equivalents. Required of master's degree candidates in comparative philosophy.


PHIL 5760-3. Philosophy of Whitehead. Twentieth century synthesizer of metaphysics of experience with philosophy of nature resulting in a process philosophy which he called process organization.

PHIL 5770-3. Philosophy of Hegel. Most famous of the early 19th century German idealists.


PHIL 5790-3. Locke, Berkeley, Hume. The three 17th/18th century founders of British empiricism.

PHIL 5800-3. Philosophy of Plato. One of the two giants of classical Greek philosophy, 4th century B.C.


PHIL 5820-3. Philosophy of Hume. Last and greatest of the founders of British empiricism.

PHIL 5830-3. Philosophy of Kant. Late 18th century synthesizer of rationalism and empiricism who is essential for understanding 19th and 20th century.

PHIL 5939-1 to 6. Cooperative Education.

PHIL 6200-3. Seminar: Ethics. Intensive study of one or more topics or ethical theorists.

PHIL 6300-3. Seminar: Epistemology. Intensive study of one or more topics of philosophers concerned with the problems of human knowledge.

PHIL 6450-3. Seminar: Metaphysics. Intensive study of one or more topics or philosophers concerned with theories of reality.

PHIL 6460-3. Seminar: Phenomenology. Intensive study of one or more topics or philosophers in the 20th century phenomenological movement.

PHIL 6620-3. Studies in Political Philosophy. A study of selected texts in political philosophy as guides to formulating the principal problems in the area and to establishing the distinctive features of political realities.


INDEPENDENT STUDY

PHIL 3840-1 to 3. Independent Study. PHIL 4840-1 to 3. Independent Study. (Undergraduate.) PHIL 5840-1 to 3. Independent Study. (Graduate.)

PHYSICS

Chair, Geography, Geology, and Physics: Martin M. Maltempo
Office: NC 3528
Telephone: 556-3456
Faculty: Professors: Willard R. Chappell, Martin P. Maltempo, Herman Sievering, Clyde S. Zaldivs
Associate Professors: William R. Simmons
Assistant Professors: Martin E. Huber, Randall P. Tagg

Undergraduate

The department offers a course of study leading to the Bachelor of Arts degree, as well as a wide range of service courses for students majoring in disciplines other than physics. Physics as a discipline is the base on which many other areas of science and engineering rest. Students majoring in physics at the undergraduate level can choose between different programs of study to prepare for either graduate studies in physics or employment upon graduation. Students preparing for employment in an interdisciplinary area can choose to add an appropriate minor, e.g., mathematics, chemistry, or geology. In order to enhance the employment options of physics graduates, the department will assist physics majors in acquiring some experience in a government or industrial laboratory prior to graduation.

The general public is welcome to attend Friday afternoon lectures presented by the Natural Philosophy Club, sponsored jointly by the physics departments of CU-Denver and Metropolitan State College. Speakers lecture on topics in physics and related topics in the sciences.

ADMISSION

Ideally, students who expect to major in physics at CU-Denver should have a high school background that includes trigonometry, advanced algebra, chemistry, and physics, as well as a good preparation in the arts and humanities. Students have an opportunity during their freshman year to overcome some deficiencies in these areas.

MAJOR REQUIREMENTS

There are several variations of a major in physics available. They are designed to suit career goals ranging from fundamental research to general education. All physics majors are required to complete and present the results of a senior thesis. This thesis will be done under the supervision of a faculty advisor and will be chosen by the student in consultation with this advisor.

Track 1—a Pure Physics. Students interested in basic research or teaching in colleges or universities need to prepare for graduate school and should take Track 1a.

a. PHYS 2311, 2321, 2331, 2341, 2811, 3110, 3120, 3171, 3181, 3211, 3331, 3411, 3811, 4810, 4951. MATH 1401, 2411, 2421, 3020.

Track 1b—Applied Physics. This track is for those students planning to teach physical science in primary or secondary schools, and should be taken with appropriate education courses. Track 1b could also be used to prepare the student for study of theoretical physics in graduate school, if taken with suitably chosen electives.

b. PHYS 2311, 2321, 2331, 2341, 2811, 3110, 3120, 3171, 3181, 3211, 3331, 3411, 3811 plus 6 hours of electives. MATH 1401, 2411, 2421, 3200.

Track 2—Applied Physics. Careers in applied physics, primarily in industry, are best served by Track 2.

PHYS 2311, 2321, 2331, 2341, 2811, 3110, 3181, 3211, 3331, 3411, 3811, 4510, 4600, 4650, 4810, 4951 or 4961. MATH 1401, 2411, 2421, 3020, 4370. CSCI 1100.

Track 3—Applied Mathematics/Physics. Track 3 is a degree in applied mathematics and physics, and should be taken by
students desiring knowledge of a lot of mathematics as well as physics. It is appropriate for further study of theoretical physics in academia or for a mathematically oriented career in industry.

PHYS 2311, 2321, 2331, 2341, 2811, 3211, 3331, 3411, 3811, and one 4000-level elective. MATH 1401, 2411, 2421, 3191, 3200, 3810, 4370, 4860, 4650, 4791.

Track 4 – Medical Physics. This track is seen as a bridge to a master’s degree in medical physics for those interested in medical research or preparation for work in a hospital or clinic situation.

PHYS 2311, 2321, 2331, 2341, 2811, 3110, 3120, 3171, 3181, 3211, 3331, 3411. MATH 1401, 2411, 2421, 3200, 3800. CHEM 2031, 2038, 2061, 2068. BIOL 2051, 2061, 2071, 2081. C SC 1100.

All physics majors, under any option, should consult with an advisor. In order to graduate with a B.A. in Physics, all physics majors must achieve a minimum GPA of 2.0 in those physics courses accepted by the department in fulfillment of their major requirements. A degree in engineering physics also is available, in collaboration with CU-Boulder. Physics is an important component in many interdisciplinary areas, such as environment, geophysical, or energy studies. Majors in these specific areas can be arranged individually.

REQUIREMENTS FOR A MINOR (16 CREDITS)

PHYS 2311, 2321, 2331, and 2341 or
PHYS 2010, 2020, 2030, and 2040 (10 credits)
At least six semester hours of electives, of which three hours must be at the 3000 level or above (6 credits).

Note: At least six credit hours of the above must be completed at CU-Denver. No grade below a C can be used to meet the requirements for the minor.

Courses

PHYS 1000-4. Introduction to Physics. An introductory survey course for nonscientists which emphasizes the main concepts of physics. Although this course is mainly descriptive, some high school algebra will be used. The accompanying lab work is designed to illustrate the material discussed in the lectures.

PHYS 1040-5. Introduction to Astronomy. A brief introduction to observational astronomy is followed by a survey of the physical processes and models which describe the evolution of planets, stars, galaxies, and modern cosmology. This course is taught in both the lecture and self-paced mode.

PHYS 1052-4. General Astronomy I. History of astronomy is studied from the Chinese to the present day. The course covers motions of the Earth, Moon, planets, Sun and stars, and gravitational theory, including analysis of tides. The solar system is discussed in detail, and the course examines the possibility of finding and contacting life elsewhere in the universe. Prereq: high school algebra or equivalent.

PHYS 1062-4. General Astronomy II. The course covers measurements of distance, brightness, temperature, size, composition and mass of stars, stellar evolution, the distribution of stars in the galaxy, and many properties of stars. Exotic objects, such as white dwarfs, neutron stars and black holes are discussed, along with general relativity. A survey of galaxies is made, and a study of cosmology: the large scale structure, properties and probable evolution of the universe. Prereq: high school algebra or equivalent. PHYS 1052 is recommended, but may be waived with instructor consent.

PHYS 1332-1. Topics in Physics. Different five-week course modules dealing with various topics in physics. See current Schedule of Classes for the particular modules being offered. Designed for non-science majors to fulfill the CLAS natural science requirement.

PHYS 2010-4 College Physics I. Mechanics, heat and sound. Prereq: college algebra and trigonometry.


PHYS 2311-4. General Physics I: Calculus-Based. Covers mechanics and thermodynamics. Emphasis on the basic principles. Four hours lecture per week. Prereq: Calculus I.


PHYS 2331-4. General Physics II: Calculus-Based. Covers electromagnetic fields, oscillatory systems, introductory quantum physics, and waves. Four hours lecture per week. Prereq: PHYS 2311, Calculus II.

PHYS 2341-1. General Physics Lab II. Prereq: PHYS 2321; coreq: PHYS 2331.

PHYS 2811-3. Modern Physics. Presents a study of the events and discoveries that occurred during the later part of the 19th and the first part of the 20th centuries which led to the discovery of quantum mechanics; viz: special relativity, particle nature of radiation, wave properties of particles, models of the atom, and the introduction of quantum mechanics. Prereq: PHYS 2331 and Calculus II.

PHYS 2820-3. Classical Physics. Fundamental principles of mechanics, thermodynamics, electromagnetism, and optics will be reviewed with an emphasis on understanding of physics through problem solving. Prereq: Calculus II and one year of physics or consent of instructor.

PHYS 3310-4. Modern Cosmology. A course in cosmology designed for non-majors covering the large-scale structure of the universe. Topics covered are gravitational theories, neutron stars, pulsars, black holes, big bang universe, steady state theory, and cosmological tests. Prereq: PHYS 1040 or 1052 or 1000 or equivalent.

PHYS 3312-3. Energy and Environment. A course in the supply and use of energy resources and the environmental problems associated with our energy use. Prereq: one course in college science or mathematics.


PHYS 3171/3181-2. Junior Laboratory I and II. Advanced laboratory in classical physics, utilizing student projects. Coreq: PHYS 3211, 3331, or consent of instructor.

PHYS 3311-4. Analytical Mechanics. Topics include the Lagrange and Hamiltonian formulations, the two body problem, rigid body motion, and small oscillations. Prereq: PHYS 2331; coreq: differential equations.

PHYS 3331-4. Principles of Electricity and Magnetism. Elements of mathematical theory of electricity and magnetism, including magnetostatics, electrostatics, polarized media, direct and alternating current theory, and introduction to electromagnetic fields and waves. Prereq: PHYS 2331, Calculus III.

PHYS 3411-3. Thermal Physics. A course covering the basic concepts of the three related disciplines of thermodynamics, statistical mechanics, and kinetic theory. Prereq: PHYS 2331.
PHYS 3620-3. Sound and Music. This course will consider the basic nature of sound waves, the ear and hearing, and musical instruments. Although this course is mainly descriptive, some high school algebra will be used. Prereq: MATH 1010 or equivalent.

PHYS 3811-3. Quantum Mechanics. A course in which both wave and matrix mechanics are developed and applied to selected problems in atomic physics. Prereq: PHYS 3211.

PHYS 3939-1 to 3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: junior standing and 2.75 grade-point average.

PHYS 3980-3. Time and Space from Thales to Einstein. An Honors in Humanities cluster course. This course deals with the definitions and nature of space-time as viewed by the physical scientist. These views have evolved to relativity and beyond. Many unanswered questions about space-time are presented. Prereq: an understanding of elementary algebra.

PHYS 4410-3. Statistical Physics. Foundations of statistical mechanics and topics of interest, such as systems of interacting particles or spins, transport theory, irreversible processes, and fluctuations. Prereq: PHYS 3411 and 3811.

PHYS 4510-3. Optics. A course which presents a contemporary treatment of selected topics in optics, such as matrix methods in geometrical optics, the Fourier analysis approach to physical optics and interaction of light with matter. Prereq: PHYS 2331.

PHYS 4610-2. Computational Physics. A course designed to provide an understanding of the role of the computer in modern theoretical physics by studying the simulation of physical phenomenon in various fields of physics. Prereq: PHYS 3120.

PHYS 4630-3. Continuum Physics. A course which presents the basic physical principles of fluid mechanics and elasticity together with their application to various problems in astronomy, physics, geology and medicine. Prereq: PHYS 3120 or equivalent.

PHYS 4650-3. Solid State Physics. Covers the basic thermal and electrical properties of solids which are explained in terms of the Brillouin zone structures of phonons and electrons. Prereq: PHYS 3411 and 3811.

PHYS 4810-3. Atomic, Molecular and Nuclear Physics. A course in which quantum mechanical methods are applied to problems in atomic and molecular physics. Prereq: PHYS 3811.


PHYS 4931-2 to 4. Internship in Applied Physics. Lab experience at major federal and industrial laboratories; to be taken in lieu of PHYS 4951 and/or 4961; an alternative means by which senior physics students complete their senior lab requirement. Prereq: PHYS 4810.

PHYS 4951/4961-2. Senior Laboratory I and II. Individual project laboratory with emphasis on modern physical experimentation. Prereq: PHYS 3181.

PHYS 4980-3. Advanced Physics Topics. This course covers a particular topic, as announced in the Schedule of Classes. May be taken more than once for credit in different topics. Prereq: PHYS 2311 and 2331.

PHYS 5959-1 to 6. Cooperative Education. PHYS 5960-1 to 8. Master's Project. PHYS 5980-3. Graduate Topics in Physics. This course covers a particular topic, at the graduate level, as announced in the Schedule of Classes. May be taken more than once for credit in different topics. Prereq: variable as appropriate for particular course.

INDEPENDENT STUDY
PHYS 1840-1 to 3. Independent Study. Lower division.

PHYS 2840-1 to 3. Independent Study. Lower division.

PHYS 3840-1 to 3. Independent Study. Upper division.

PHYS 4840-1 to 3. Independent Study. Upper division. Students must check with a faculty member before taking this course.

PHYS 5840-1 to 3. Independent Study. Graduate level.

POLITICAL SCIENCE
Chair: Joel C. Edelstein
Office: NC 3103C
Telephone: 556-8317
Presidential Teaching Scholar: Michael S. Cummings
Professor: Jana G. Everett
Associate Professors: Joel C. Edelstein, Glenn T. Morris, Stephen C. Thomas
Assistant Professor: Lucy C. Ware
Adjunct Faculty: Ken Gordon
Political Science Advisory Board: Arie Taylor, Tattered Cover Bookstore, Barbara Barrow, CU Health Science Center

Catherine Bedard-Bayne, Head, Foreign Language Institute of Denver
The Hon. Richard Borchers, Magistrate, U.S. District Court
The Hon. Jeanne Faatz, Colorado House of Representatives
Rabbi Stephen Foster, Temple Emmanuel
James Gottschalk, U.S. West
The Reverend Marshall Gourley, Our Lady of Guadalupe Church
Father Ed Judy, Executive Director, Samaritan House
The Hon. Wayne Knox, Colorado House of Representatives
Dave Loeschel, United Bank
Paola Nicholas, The Learning Channel
Reverend Stephen Papa, First Universalist Church
Paul J. Sandovol, restaurateur and former State Legislator
Joseph Schieffelin, former Colorado Senate Majority Leader
Helen Shreves, Esq., former President, Colorado Women's Bar Association
Arie Taylor, Coors and former State Legislator
Arthur Warner, M.D., Kaiser Permanente
Natalie Warner, community activist

Undergraduate

Political science is the study of people, power, and the public good. Looking at a variety of societies, institutions, and interpersonal situations, the discipline asks who has the power, where this power comes from, how it is used, how it promotes or impairs the public good, and how the public good is defined. Political science draws from other fields, such as psychology, philosophy, economics, sociology, and world literature. Finally, it explores the relationship between idealism and realism, between theory and practice, between political thought and personal action.

Opportunities for students with a B.A. in political science include careers in business, teaching, journalism, and government service. A political science degree also serves as good preparation for professional training in law and public administration. The students' internship experiences increase their job opportunities. Students with an M.A. in political science may find careers in such areas as business, government research and administration, and teaching at the community college level.

Requirements for the Major. Undergraduate majors must complete a minimum of 30 semester hours in political science, of which at least 21 must be upper division courses. Fifteen of the 30 hours must be
taken from CU-Denver faculty. Courses are distributed among the primary fields as listed in this section, i.e., American politics, comparative politics, international relations, political theory and public law, and public administration. The majors must include the following: PSC 1001, 1101, 3011, 4047, 4417; ECON 2012 and 2022; and one upper division course in each of three fields—American politics, comparative politics, international relations. With faculty approval, students may earn course credit for political internships through Cooperative Education, PSC 3939, and for individually tailored courses of independent study.

Requirements for the Minor: A student can earn an undergraduate minor in political science by completing 15 semester hours distributed as follows: one lower division course (PSC 1001 or 1101) and four upper division courses including one each in political theory, American politics, comparative politics, and international relations.

Graduate

REQUIREMENTS FOR ADMISSION

Students applying for admission to the M.A. program in political science normally should present at least 18 hours of undergraduate or previous graduate work in political science, at least 9 hours of which should be at the upper division or graduate level. Deficiencies may be made up at CU-Denver by enrolling in political science courses as a non-degree student. Deficiencies usually must be made up before the student will be admitted as a regular degree student, and the work involved will be in addition to the minimum hourly requirements for the degree. The department may make exceptions to these requirements in unusual cases (for instance, if course work in related fields such as psychology, economics, and history, or practical political experience, compensate for the deficiencies in political science). Applicants are normally expected to present an undergraduate GPA of at least 3.0. In addition to transcripts and letters of recommendation specified by The Graduate School, applicants must submit a statement of academic objectives. Standardized test scores and samples of scholarly work are not required of applicants, but will be considered if submitted.

DEGREE REQUIREMENTS

Two degree plans are available. Under Plan I, degree requirements are 7 graduate courses and an M.A. thesis. Under Plan II, degree requirements are 11 graduate courses and a project. At least 4 of the courses must be graduate seminars in political science, while as many as 3 may be independent study in political science or graduate seminars in cognate disciplines (but not more than 2 of either). Course work must include at least one graduate seminar in each of three broad sub-fields: theory, American politics, and foreign politics. The thesis can be an article for publication, a speculative treatise in political theory, a job-related analysis of political decision making, or a more traditional research paper.

Emphasis of the political science discipline at CU-Denver is on critical perspectives, creative teaching and writing, interdisciplinary work, experimental involvement, and cooperative research projects. Close and continuing contact among students and faculty is encouraged.

Courses

GENERAL COURSES

PSC 1001-3. Contemporary Political Issues. Introduction to the study of political science, its human importance, and its relationship to social institutions. Analysis of the relationship between individual political behavior and characteristics of the political system. Development of key concepts.

PSC 2001-3. Topics in Political Science. Covers different areas of politics. Can be taken more than once for credit when topics vary. PSC 3000-1 to 3. Topics in political science. Covers different areas of politics. Can be taken more than once for credit when topics vary.

PSC 3002-1 to 3. Topics in Political Science. Covers different areas of politics. Can be taken more than once for credit when topics vary. Includes conference participation (1 unit).

PSC 3011-3. Research Methods. (SOC 3111.) Design of political/social research. Applications of statistical techniques and procedures to social and political phenomena.

PSC 3939-1 to 3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: junior standing and 2.75 grade-point average.

PSC 4002-3. Topics in Political Science. Covers different areas of politics. Can be taken more than once for credit when topics vary.

PSC 5008-3. Graduate Topics in Political Science. Covers different areas of politics.

Can be taken more than once for credit when topics vary. Prereq: permission of instructor or graduate standing.

PSC 5950-1 to 3. Master’s Thesis.

PSC 5960-1 to 8. Master’s Project.

PSC 6008-1 to 3. Graduate Topics in Political Science.

PSC 6950-1 to 4. Master’s Thesis.


PSC 6990-1 to 3. Graduate Research Topics. Individual research in some subject of interest to the graduate student. Subjects are chosen and arrangements are made to suit the needs of each particular student. Prereq: consent of instructor.

INDEPENDENT STUDY

PSC 3840-1 to 3. Independent Study.

PSC 4840-1 to 3. Independent Study. (Undergraduate). 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 to them. Subjects chosen and arrangements made to suit the needs of each student. Primarily for seniors. Prereq: 15 semester hours in political science and consent of instructor.

PSC 5840-1 to 3. Independent Study. (Graduate).

PSC 6840-1 to 3. Independent Study.

AMERICAN GOVERNMENT AND POLITICS

PSC 1101-3. American Political System. General introduction to the American political system with emphasis upon the interrelations among the various levels and branches of government, formal and informal institutions, processes, and behavior. Required of all majors.


PSC 3034-3. Race, Gender, Law, and Public Policy. Historical overview of race and gender relations in the U.S. and an examination of the treatment of issues of race and gender in the judicial system and public policy.

PSC 3035-3. Political Issues of Race and Gender. Examination of the emergence, growth and decline of social movements for race and gender equality. Discussion of political issues of race and gender in the 1990s.

PSC 3062-3. Power in American Society. An introduction to U.S. political economy. An intermediate level introduction to the political and economic forces and structures which shape the opportunities available to the American people. Among topics included are reciprocal impacts.
of government and business, the federal budget, taxation, lobbying and special interests, and elections.


P SC 3204-3. Practical Politics. Liberal, conservative, and radical approaches to political action. Political resources, opportunities, and effectiveness. Political strategies and tactics. Key political informational sources. Moral and pragmatic dilemmas of political action. Individual and group interest versus the public good. Student political involvement required.

P SC 3214-3. Federal Law and American Indians. An examination of the legal and political history of the U.S. in relationship to American Indian nations. The focus will be on specific laws and Supreme Court cases in federal Indian law, with analysis given to U.S. policy. There will be some comparison with Indian policies of other countries.

P SC 3404-3. Love, Responsibility, and Justice: An Exploration Through Film. Explores issues of power distribution, social status, and economic consequences of various political systems and subsystems in the United States and around the world.

P SC 3504-3. Law for Survival. Survey of law applicable to situations frequently encountered in America, including civil and criminal actions, negligence, international torts, divorce, wills, home purchase, landlord-tenant, partnership, corporate law, civil liberties. Role of the lawyer in these areas is examined.

P SC 3532-3. Modern Capitalist States. An examination of various models of Western advanced capitalist states: laissez-faire, pluralist, welfare state, Marxist, and postindustrial. Student research for purposes of testing the alternative models. Emphasis on the U.S.

P SC 3554-3. Minority Politics. (ETST 3554.) An examination of the social, cultural, and economic factors which affect the political choices of ethnic minorities in the United States. Analysis of minority political action.

P SC 3804-3. Cross-Cultural Field Experience. Offers students an opportunity to study other political systems through internships and study-travel programs.

P SC 4022-3. Utopian Fiction. Political, philosophical, and literary examination of classic works of utopian and dystopian fiction.


P SC 4054-3. Public Opinion and Political Behavior. Measurement of public opinion and evaluation of its impact on governmental policy formation, including survey research techniques and field work in opinion sampling.

P SC 4064-3. State Government and Administration. Present-day 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 4074-3. Urban Politics. Examination of the structure of political and social influence in urban areas, selection of urban leadership, relationship of the political system to governmental and social institutions. Citizen involvement in urban decision making.

P SC 4084-3. Municipal Government and Administration. Municipalities and relationships to the states and the national government; local politics; forms of municipal government; application of ideas and techniques of public administration to management of municipal affairs; activities, e.g., planning, public utilities, law enforcement, fire protection.

P SC 4094-3. Comparative Metropolitan Systems. Comparative analysis of the major metropolitan systems of North America and Europe; the structural environment, decision making in the bureaucracies and political groupings, governmental interaction and communication.

P SC 4354-3. Environmental Politics. Political, legal, and economic forces in environmental law and policy. Special emphasis on air and water pollution and on threats to public and agricultural land.


P SC 4444-3. Contemporary Culture and Politics in America. Intellectual and experiential investigation of the interplay of culture and politics in American society, as manifested in literature, social and political philosophy, psychological writings and trends, radical movements and daily behavior.


P SC 4494-3. American Judicial System. Examination of the principle actors in the legal system: police, lawyers, judges, citizens. About half the course will be devoted to the study of judicial behavior, especially at the Supreme Court level.


P SC 4554-3. The Mexican American in Politics. (ETST 4458.) Analysis of the social, cultural, and economic factors which affect political behavior of Mexican Americans. Special attention will be paid to the Mexican-American cultural heritage and to relations between Mexican Americans and Anglo Americans.

P SC 4564-3. Political Perspectives on Women. Analysis of the political experience of women and of strategies of change.

P SC 4574-3. Political Socialization. An examination of the processes involved as individuals develop and change their political values, beliefs, and patterns of participation over the life cycle. The conditions under which political socialization contributes to system maintenance and/or change as well as variations across genders, classes, ethnic groups, and political systems will be considered.

GRADUATE LEVEL

P SC 5018-3. Seminar: American Politics. Intended primarily for students who have had an undergraduate course in American politics, this course will be devoted to the preparation and criticism of research papers with some examination of literature in the field. Prereq: graduate standing or consent of instructor.

P SC 5028-3. Seminar: Colorado Politics. Research and problems in practical politics, with emphasis on politics in
P SC 5048-3. Seminar: The Presidency. Intensive examination and preparation of research papers on the historical, functional, and constitutional aspects of the Presidency. Broad attention will be given to the literature on the presidential system and to analytical comparisons with other executive systems.

P SC 5058-3. The Legislative Process. This course will provide an intense examination of the structures and interactions through which laws are made in the United States. The major emphasis will be the national level, but considerable attention will also be devoted to state legislatures and local lawmaking bodies.


P SC 5358-3. Seminar: Natural Resources—Policy and Administration. Provides a conceptual model of the policy decision process in natural resources decision making and focuses on selected case studies.


P SC 5628-3. Seminar: Gender and Society. This course will examine the empirical literature of male-female power relations, critique the existing theory, and seek to reconceptualize the nature and scope of politics in order to incorporate fully the study of women in political science. Papers and a research design.

P SC 6038-3. Research Seminar: Democratic Theory, Participation, and Industrial Democracy. Two-fold purpose: to introduce the student to the literature of direct and industrial democracy and to provide an experience in research (research design, test construction, and interviewing).

COMPARATIVE POLITICS

P SC 3022-3. Introduction to Comparative Politics. Comparison of the basic political features of selected countries. Themes examined include evolution and revolution, socioeconomic development, political instability, and elite-power relations.

P SC 3105-3. Women Making Change: An International Perspective. Offers an understanding of the historical, economic, and sociocultural background of women’s changing roles and functions in the contemporary world. The approach and material are multi-disciplinary. The goal is a balanced understanding through analysis and discussion.

P SC 4105-3. Comparative Politics: Western Europe. An intensive and comparative analysis of the political systems and processes of Western Europe. Emphasis on cultural and political economy; executive-legislative relationships; electoral systems; political parties and interest groups; political dynamics and citizen participation; and the impact of social changes on political institutions.


P SC 4185-3. Politics of Southeast Asia. A survey of the historical and contemporary forces shaping relations among states in Southeast Asia. Special attention will be given to big power involvement in the region and to the factors linking Southeast Asia to the international system.

P SC 4195-3. Political Systems of Sub-Saharan Africa. Analysis of major types of political systems in sub-Saharan Africa and intensive case studies of selected countries exemplifying each type.


P SC 4605-3. Politics of South Asia. The study of the political systems of India, Pakistan, Ceylon, and Nepal. The impact of British rule on the development of political institutions on the subcontinent as well as problems of political development at all levels will be considered.


P SC 4625-3. Comparative Socialism. (ECON 4170) Comparative analysis of public policy of governments describing themselves as socialist - as committed to abolishing social classes, ending alienation, and achieving equality and abundance. Emphasis on historical conditions, political and economic organization, work incentives, education, technology, and popular culture.


GRADUATE LEVEL

P SC 5108-3. Seminar: Comparative Politics—Western Europe. Examination and writing of research papers on selected topics of industrial democracies, especially those of Western Europe.


P SC 5118-3. Seminar: Political Development. Writing and discussion of comprehensive papers on selected aspects of political development within the non-Western world. Focus on the theory of political development of the heuristic value of this conceptual framework for the comparative study of non-Western polities. Introduction to research methods and materials in this field.

P SC 5128-3. Seminar: Politics of the Western Hemisphere. Examination and writing research papers on selected topics of countries in the Western Hemisphere.

P SC 5138-3. Seminar: Latin American Politics. Seminar designed to stress intensive study of the political process system in Latin America with special emphasis on
the variables which affect Latin American political behavior and development. Prereq: P SC 4132 or consent of instructor. 
P SC 5158-3. Seminar: Political Economy of Post-Communist States. Critical examination of variables which affect policy development in countries characterized by a state-owned, planned economy. Countries selected for study, degree to which the seminar focuses on one or more states, and allocation of work between common reading and individual research may vary with each offering. 
P SC 5168-3. Seminar: The Political System of Japan. Discussion of current literature on political and economic development of the Japanese state, with particular focus since World War II. 
P SC 5188-3. Seminar: Southeast Asian Politics. Examination and writing of research papers on selected topics concerning the countries of Southeast Asia. 
P SC 5198-3. Seminar: Comparative Politics—Sub-Saharan Africa. Writing and discussion of analytical literature, reviews, and research papers on various aspects of political change in sub-Saharan Africa. 
P SC 5608-3. Seminar: Comparative Political Parties and Interest Groups. Critical examination of topics relating to social forces, parties, and interest groups. Analysis of concepts, theories, and case studies with particular emphasis on Western political parties and interest groups. 
P SC 6408-3. Politics of South Asia. Examination of concepts, proposition, and theories employed in the analysis of India, Pakistan, and Nepal. Examination and writing of research papers on selected topics. 

INTERNATIONAL RELATIONS 
P SC 2006-1 to 3. Topics in Political Science: International Relations. Intensive analysis of selected current issues in the international arena, including war and peace, economic trade and aid, and the environmental crisis. 
P SC 3042-3. Introduction to International Relations. Basic background and methods for analysis of current issues in international affairs such as the arms race, detente, human rights, and the role of multinational corporations. 
P SC 3656-3. The United States in World Affairs. Intensive study of the interaction of the United States with other nations in the international political economy; U.S. political, economic, and military roles in world affairs; symbolic impact of the U.S. model abroad in comparison with selected other national models. 
P SC 4216-3. International Politics. The system of nation states, concepts of national interest, goals of foreign policies, conduct of diplomacy, and the bearing of these elements on the problem of peace. Presentation and evaluation of the solutions that have been offered for the maintenance of peace. Great powers and regions of the earth in international politics today and their roles in international tensions. 
P SC 4236-3. American Foreign Policy. Examination of the foundations, assumptions, objectives, and methods of U.S. foreign policy. Special attention to the revolutionary international environment and to problems of colonialism and imperialism. 
P SC 4246-3. Women in International Development. Examination of interdisciplinary perspectives on gender and international development. Investigation of the costs and benefits to women of the processes of capitalist and socialist development. 
P SC 4266-3. International Law. An investigation of the body of law which regulates relations between nations and provides a framework for solving of common problems and disputes between nations. 
P SC 4286-3. International Relations: War or Peace? Presentation of alternate theoretical frameworks for the explanation of international processes. Theories of conflict behavior and social organization applied to problems of war and peace. Major emphasis on the role of systematic empirical research in the development of theories of international behavior. 
P SC 4726-3. Soviet and Chinese Foreign Policy. Foreign policies of the Soviet Union and China, including the Sino-Soviet conflict; relations with Western powers and the Third World; interaction of domestic developments and foreign policy; role of national interest, ideology, and elite personalities. 
P SC 4736-3. Middle East and World Affairs. Evolution and revolution in the Middle East. The character of nationalism in the area. Analysis of interregional and international problems affecting the Middle East with special emphasis on the Arab-Israeli imbroglio. 
P SC 4746-3. Sub-Saharan Africa in World Affairs. Examines the relations between the states of sub-Saharan Africa and between those states and the international system. 
P SC 4756-3. Africa in U.S. Foreign Policy. The relation of various African states and U.S. foreign policy goals and implementation. Examines selected foreign policy issues since World War II. 
P SC 4766-3. International Relations in the Far East. Major developments in the modern relations of China, Japan, and Korea with each other and with other world regions. Analysis of selected issues in contemporary East Asian international politics. 

GRADUATE LEVEL 
P SC 5218-3. Seminar: International Relations. Primarily devoted to writing and discussion of comprehensive research papers in the field of international power politics and the attempts at controlling conflicts among nations. Introduction to research methods and materials in the field. 
P SC 5238-3. Seminar: American Foreign Relations. Examination of selected methodological and substantive problems. Particular emphasis on elements of national decision making. America's adaptation to the changing world, and on opportunities for student contributions through research and discussion. 
P SC 5246-3. Women in International Development. Examination of interdisciplinary perspectives on gender and international development. Investigation of the costs and benefits to women of the processes of capitalist and socialist development. 
P SC 5258-3. Seminar: National Question and Self-Determination. In international affairs. Using indigenous peoples as the primary focus, this course will examine the development of the right to self-determination in international law and politics. It will analyze the theory and practice of capitalist and socialist states with regard to the national/indigenous questions.

PSC 5748-3. Seminar: Africa in World Affairs. Examines the relations between states of Africa and the international world system. Examination and writing research papers on selected topics.

**POLITICAL THEORY AND PUBLIC LAW**


PSC 4407-3. Early Political Thought. Main currents of political thought in their historical setting from Plato to Machiavelli, with a critical evaluation of those elements of continuing worth. Required of all majors.

PSC 4417-3. Modern Political Thought. Main currents of political thought in their historical setting from the 17th century to the present. Development of the student's own political theory. PSC 4407 is not a prerequisite for PSC 4417. Required of all majors.


PSC 4477-3. Constitutional Law I. Nature and scope of the following American constitutional principles as developed by the U.S. Supreme Court: federalism, jurisdiction of the federal courts, separation of powers, the taxing power and the commerce power. Case method.

PSC 4487-3. Constitutional Law II. Continuation of PSC 4477, with emphasis on the war powers of the president, citizenship, the Bill of Rights, and the Civil War amendments. Case method.

PSC 4807-3. Revolution and Political Violence. Study, discussion, and evaluation of alternative frameworks for the analysis of revolution and political violence. Theoretical material will be firmly couched in case situations such as Western, class, colonial, urban, international, historical, racial, religious, and intergenerational violence. Development by the class of its own theoretical model.

PSC 4827-3. Women and the Law. An examination of the role of the courts in the development of public policy toward women; how the legal system affects the economic power, family roles, safety, and political participation of women.

PSC 4837-3. Contemporary Issues in Civil Liberties. Conflicting rights of individuals and their society in several areas of civil liberties, including religious cults, free speech, sexual freedom, racial quotas, and antigovernmental actions and publications. Course will include case-law, readings, guest speakers, and case discussions.

**GRADUATE LEVEL**

PSC 5408-3. Seminar: Topics in the History of Political Thought. Selected topics, such as freedom, justice, equality, and revolution, in leading political philosophies from classical and modern political thought.

PSC 5413-3. Philosophical Problems in the Social Sciences. Exploration into the fundamentals of the conduct of inquiry; concept formation and theory construction in the social sciences; issues related to value judgments and objectivity, social praxis, human nature, etc.


PSC 5478-3. Seminar: American Constitutional Law. Intensive analysis of the most recent doctrinal developments in the areas of federal jurisdiction, federalism, separation of powers, commerce, taxing and war powers, civil liberties, civil rights, etc. Designed primarily for graduate students who intend to offer American government as a field for examination for an advanced degree. Prerequisite: PSC 4477-4487 or consent of instructor.

PSC 5498-3. Seminar: The Behavioral Study of Public Law. Intensive, critical examination of theoretical and substantive literature dealing with the behavior of the primary actors in the legal system - police, lawyers, judges, and citizens. Emphasis will be on the empirical approach and quantitative methods. Research papers will be required.

PSC 5808-3. Seminar: Conflict Behavior - the Politics of Violence. Theoretical and empirical analysis of conflict behavior with special emphasis on the explanation of political violence. Revolution, international warfare, and urban unrest are studied as forms of political violence, and the role of systematic empirical research is emphasized in the development of general theories of intergroup conflict.

PSC 5828-3. Seminar: Political Psychology. Role of personality variables in political attitudes, behavior and system maintenance and change; human nature as a parameter; political relevance of psychoanalytic, behaviorist, existential, and social psychology; alienation, ethnocentrism, dogmatism, and aggression as political variables. Prerequisite: PSC 4407, 4417, or consent of instructor.

PSC 6418-3. Seminar: Political Thought. Intensive research in and presentation of selected topics intended to introduce the mature student to the broad context in which political ideas arise. Deals with classical and modern thought. Prerequisite: PSC 4407, 4417, or consent of instructor.

PSC 6428-3. Seminar: Systematic Political Theory. Theories relevant to an understanding of social and political systems and behavior.

PSC 6808-3. Seminar: The Formal Study of Power. Approaches to the conceptualization and measurement of power as a social behavior with applications to community, national, and international power systems. Various structures of political authority are studied with regard to the power relations implicit in each. Forms of economic and interpersonal expressions of power relationships also are examined.

**PUBLIC ADMINISTRATION**

PSC 2002-3. Introduction to Public Administration.


PSC 4324-3. Public Administration. Role of administration in government; trends in American public administration; techniques of management; theories of public administration.

**PSYCHOLOGY**

Chair: Rick M. Gardner
Office: NC 5002
Telephone: 556-8565
Faculty: Professors: Janis W. Driscoll, Rick M. Gardner, Gary S. Stern
Associate Professor: Joy L. Berrenberg, Mitchell M. Hendeisman, Peter S. Kaplan, Kurt Sera-Kraiger
Assistant Professors: JoAnne Bachorowski, René de la Garza, James G. Nimmer, Nell G. Fahrion
Emeritus: Eugene A. Lopez, Personnel Researcher
Psychology Advisory Board
Norman J. Brisson, Diversion Officer, Personnel Researcher, CU Health Sciences Center
Perry Butterfield, Research Associate, CU Health Sciences Center
Martha Daley, Director, Office of Child Care Initiatives, City and County of Denver
Lyda Dubberstein, Communication Analyst
Janet Favero, Ph.D., Industrial-Organizational Psychologist
Marti Lee Foster, Horse Trainer
Carol J. Garrett, Ph.D., Director of Information and Evaluation, Division of Youth Services, State of Colorado
Justice Howard Kirschbaum, Colorado Supreme Court
Eugene A. Lopez, Personnel Researcher
Paul S. Sherman, Ph.D., Director of Policy Development and Training, Colorado Division of Mental Health
Priscilla Zynda, Ph.D., Clinical Psychologist

Undergraduate
Psychology is the scientific study of behavior, consisting of the following major areas of study: experimental psychology, biopsychology, animal behavior, developmental psychology, social psychology, learning and cognition, personality, industrial/organizational psychology and abnormal psychology. The requirements for the major are designed to introduce the student to the spectrum of psychology, including an early exposure to research methods and statistics. Although some specialization is possible, the faculty believes that this is more appropriate at advanced levels and that the undergraduate should have a broad background upon which to base future specialization.

The psychology major prepares students for employment and for graduate study in psychology and related fields. A program leading to the master's degree in particular applied areas of psychology is available at CU-Denver.

Requirements for the Major. Students should consult with a department advisor when they declare a psychology major.

Psychology major requirements include at least 30 and not more than 48 semester hours in psychology. Of these, at least 16 hours must be in upper division courses and 14 of the upper division hours must be completed at CU-Denver. No grade below C will be accepted toward the major requirements. College algebra must be included in the lower division curriculum. Specific course requirements include:

PSY 1000, 1005, 2090, and 2110; at least two biopsychology courses such as PSY 3224, 3254, 4054, 4144, 4164, 4254; at least two sociotropic psychology courses such as PSY 3205, 3215, 3305, 4115, 4455, 4495, 4715; at least one advanced laboratory course such as PSY 4154, 4174, 4224, 4445; and one integrative course, PSY 4511.

Students interested in earning departmental honors should consult with the Psychology Honors Advisor during the junior year. Psychology majors transferring from other institutions must complete a minimum of 14 upper division hours in psychology at CU-Denver, including two biopsychology psychology courses, two sociotropic courses, and one laboratory course.

Requirements for the Minor. A minor in psychology requires the completion of the following courses with a grade of C or better: PSY 1000, 1005, and 4511, one biopsychology course, and one sociotropic psychology course.

Further information about the department may be obtained from department advisors or by calling 556-8565.

Graduate
The M.A. degree in psychology at CU-Denver can be obtained with a specialty in industrial/organizational psychology, or clinical psychology. Students interested in the M.A. degree should obtain information directly from the Department of Psychology.

In cooperation with the College of Business and Administration, the Department of Psychology also offers a dual M.B.A./M.A. degree with an emphasis in industrial/organizational psychology and human resources management.

Requirements for Admission
Students wishing to be admitted to the M.A. program should be familiar with the Requirements for Advanced Degrees.

Applicants must have a baccalaureate degree from an accredited college or university. The minimum GPA is 2.75, although a substantially higher GPA is typical of successful applicants. The GRE General Test and Subject Test in Psychology are required. In addition, the decision to admit an applicant is based on letters of recommendation, relevant work or research experience, and completion of required prerequisite courses for each specialty. Both full- and part-time students are encouraged to apply.

Degree Requirements
Students are required to complete 24 semester hours of course work and either a thesis or an internship in an approved agency setting.

Further information can be obtained from the Department of Psychology, 556-8565.

Courses
PSY 1000-3. Introduction to Psychology I. Introduction to the scientific study of behavior, including an overview of the biological basis of behavior, sensation/perception, states of consciousness, learning and memory, thinking and language, intelligence, motivation and emotion.

PSY 1005-3. Introduction to Psychology II. Introduction to the scientific study of behavior including an overview of the history of psychology, development, personality, psychological disorders, therapy, health psychology, and social behavior.


PSY 2220-3. Biological Basis of Behavior. An introduction to the biological basis of behavior. The course will feature concepts like neurons, synaptic and hormonal transmission and physiological set-points, behavior of simple (invertebrate) and complex organisms (vertebrates) will be related to the activity of specific brain neural networks. Prereq: Introduction to Psychology I or General Biology I.

PSY 2290-3. Drugs and Behavior. An introduction to the actions of psychoactive drugs on human behavior. Information is presented in a manner accessible to students with limited background in the biological sciences. Covers commonly used substances like coffee and abused drugs like nicotine and cocaine. Prereq: sophomore standing.

PSY 2990-1 to 3. Topics in Psychology. Study of special topics to be selected by the instructor. May be repeated for credit.
PSY 3135-3. Organizational Psychology. A survey of the behavior of individuals in organizations. Topics include leadership and motivation theories; group dynamics; measuring, understanding and explaining job attitudes; analyzing and designing jobs; training and organizational development. Prerequisite: PSY 1000.


PSY 3254-3. Introduction to Animal Behavior. (BIOL 3254.) A survey of the behavior of nonhuman animals, emphasizing the evolution through natural selection. Prerequisite: six hours of psychology and/or biology.

PSY 3260-3. Animal Learning and Cognition. Basic principles of habituation, classical and instrumental conditioning are integrated with studies of biologically guided learning, memory, and other cognitive processes in animals. Prerequisite: PSY 1000.

PSY 3262-3. Health Psychology. An overview of the scientific study of attitudes, behaviors, and personality variables related to health and illness. Emphasis is on the interaction of biological, psychological, and social factors that cause illness and influence its treatment and prevention. Prerequisite: PSY 1000.


PSY 3505-3. Psychology and the Law. Examines the legal and extralegal applications of psychology such as assessment of insanity and competence, psychologists as expert witnesses, accuracy of eyewitness accounts, and issues relating to employment discrimination.

PSY 3600-1 to 3. Topics in Psychology. Study of special topics to be selected by the instructor. May be repeated for credit.

PSY 3724-3. Developmental Psychobiology. (BIOL 3724.) Exploration of the biological influences on the development of brain and behavior. Emphasis is on the evolution and development, the role of experience in prenatal and postnatal development, the ontogeny of sensory systems, learning and memory, and the biological bases of language acquisition. Prerequisite: Introduction to Psychology or General Biology.

PSY 3939-1 to 3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prerequisite: junior standing and a 2.75 grade-point average.

PSY 4054-3. Behavioral Neuroscience. The morphological, biochemical, and physiological bases of behavior. Emphasis is on structure and function of the brain. Prerequisite: PSY 1000 and six additional hours of psychology.

PSY 4144-3. Human Cognition. The study of information processing in humans, with emphasis on memory, thinking, and language. Prerequisite: PSY 1000 and six additional hours in psychology, or consent of instructor.

PSY 4154-2. Laboratory in Human Cognition. Laboratory experiments demonstrating principles of human memory, thinking, and language. Fulfills the advanced laboratory requirement for the psychology major. Prerequisite: PSY 4144.


PSY 4174-2. Laboratory in Perception. Demonstrations and experiments dealing with perception. Prerequisite: PSY 4164. May be used to fulfill the advanced laboratory requirement in psychology.

PSY 4224-2. Laboratory in Animal Learning and Cognition. Experimental projects demonstrate basic principles of conditioning. Fulfills the advanced laboratory requirement for the psychology major. Prerequisite or corequisite: PSY 3224.

PSY 4394-2. Laboratory in Animal Behavior. Experiments and observational projects demonstrate basic principles of natural behavior in animals. Fulfills the advanced laboratory requirement for the psychology major. Prerequisite or corequisite: PSY 3224.

PSY 4415-3. Experimental Social Psychology. Readings and lectures focused on the formulation of researchable problems in social psychology. Prerequisite: PSY 1000 or 2101; corequisite: PSY 4445.

PSY 4445-2. Social Psychology Laboratory. Experimental methods of studying social psychological processes. Corequisite: PSY 4415. May be used to fulfill the advanced laboratory requirement in psychology.

PSY 4455-3. Theories of Personality. An in-depth look at several major theories of personality, including those from psychoanalytic, behavioral, and humanistic schools of thought. Students are required to think actively and abstractly, and communicate their ideas in papers and classroom contributions. Prerequisite: PSY 1000 plus six additional hours in psychology.

PSY 4485-3. Psychology of Cultural Diversity. A survey of the study in the development of the individual across Asian, Black, Hispanic, and Native American cultures will be presented. The experience of self, role of the family, expression of emotions, and the psychology of prejudice will be emphasized. Prerequisite: 6 semester hours of psychology, sociology and/or anthropology in any combination.

PSY 4511-3. History of Psychology. Development of psychological theories since 500 B.C. Schools of psychology and their adherents. Readings of primary and secondary sources. Prerequisite: 16 hours of psychology and senior standing.

PSY 4645-3. Industrial Psychology. Survey of the field of industrial psychology. Organizational structure, communication networks, personnel selection, training, stress, and human relations will be examined. Prerequisite: PSY 1000.

PSY 4655-1. Laboratory in Industrial Psychology. The lab is designed to familiarize students with the practical applications of industrial psychology. Specifically, students will conduct job analyses, develop performance appraisals, and perform simulations of various industrial psychology tasks using personal computers. Prerequisite: PSY 2101.

PSY 4945-3. Psychology of Sports. Study of the application of psychology to issues in sports such as athlete motivation and crowd behavior. Covers the application of theories of learning, social psychology, and cognitive psychology.

UPPER DIVISION/GRADUATE LEVEL

Students enrolled at the 5000 level may expect additional work and evaluation commensurate with graduate standards.

PSY 4104/5104-3. Behavioral Genetics. (BIOL 4104/5104.) Lecture. Interdisciplinary course on relationships between behavior and heredity with emphasis on human behavior genetics. Prerequisites: PSY 4104: General Biology or General Psychology.

PSY 4134/5134-3. Drugs and the Nervous System. The role of various psychoactive drugs and their effects on behavior. Covers concepts such as blood-brain barrier, half-life, drug potency, and drug effect.

PSY 4254/5254-3. Advanced Animal Behavior. (BIOL 4254/5254.) Principles of natural behavior in a variety of species, biological influences on sociality, and
issues in Neo-Darwinian evolution are discussed. Prereq: for 4254, six hours general biology (or consent of instructor), upper division standing and PSY/Biol 3254; for 5254, same as for 4254 with graduate standing.

PSY 4715/5730-3. Clinical Psychology: Ethics and Issues. An in-depth exploration of the values and ethical ideas that guide professional practice in psychology, including philosophical ethical principles and professional codes of conduct. Specific topics include confidentiality, informed consent, competence, and respect for persons. Students are expected to be able to think about and communicate difficult ethical concepts in the form of class participation and a major paper. Prereq: for 4715, PSY 3305 and 4455; for 5730, admission to the graduate program in psychology or consent of instructor.

PSY 4990/5990-1 to 3. Topics in Psychology. Advanced study of special topics to be selected by the instructor. May be repeated for credit. Prereq: consent of instructor.

GRADUATE LEVEL


PSY 5030-3. The Coordinated Community Response Model. Development of skills to utilize local and national research in the field of family violence to plan, organize, and implement a coordinated community response to needs of victims and for treatment of perpetrators. Prereq: admission to certificate program in family violence.

PSY 5040-3. Theories of Intervention. Covers various theories of intervention in family violence including psychoanalytic, cognitive-behavioral, family systems, feminist, and containment. Evaluates the research and includes an analysis of relative strengths and weaknesses. Required for the family violence certificate. Prereq: admission to certificate program in family violence.


PSY 5140-3. Industrial Psychology. An advanced survey of the field of industrial psychology. Covers research on worker satisfaction, motivation, and variables affecting recruitment, retention, and promotion of employees. Prereq: admission to graduate program in psychology or consent of instructor.

PSY 5150-3. Seminar in Organizational Psychology. A survey of traditional topics in organizational psychology including job attitudes, work motivation, and leadership. Current topics as defined by research undergraduate course in industrial or organizational psychology, graduate student status, or consent of instructor.

PSY 5360-3. Introduction Psychotherapy. Survey of some of the major schools of psychotherapy, including psychodynamic, person-centered, rational-emotive, and family systems. Prereq: admission to the graduate program in psychology or consent of instructor.

PSY 5450-3. Advanced Personality Theory. Advanced topics in personality theory. Covers research in personality. Emphasis is on structure, dynamics, and process. Prereq: admission to the graduate program in psychology or consent of instructor.

PSY 5560-3. Training and Development. Course will provide an applied systems perspective on conducting training and organization development. Topics include needs assessment, organizational diagnosis, various interventions, and evaluation. Prereq: graduate status or permission of instructor.

PSY 5703-3. Applied Research Methods. Exploration of the use of program evaluation in various applied psychology settings. Introduction to the use of the statistical package for social scientists in computer data analysis. Design of individual program evaluation proposals. Prereq: admission to the graduate program in psychology or consent of instructor.

PSY 5713-3. Advanced Statistical Methods. Experimental design and analysis of controlled interventions and evaluations. Emphasis on multifactorial analysis of variance, orthogonal contrasts, post-hoc tests, multiple regression, and analysis of covariance. Prereq: admission to the graduate program or consent of instructor.


PSY 5783-3. Interviewing and Counseling. Students practice interviewing, and develop skills including the ability to listen actively, to critique their own work and the work of others, to think carefully about issues that arise in clinical work with clients. Limited to students who are admitted to the graduate program in psychology or consent of instructor.

PSY 5930-1 to 6. Cooperative Education. PSY 6400-3. Child Assessment. Psychometric theory and practice in assessment of children with focus on the Stanford-Binet, the DDST, WPPSI, and WISC-R. Prereq: admission to the graduate program in psychology or consent of instructor.

PSY 6420-3. Adult Assessment. Psychometric theory and practice in assessment of adults. Focus on the Wais and Stanford-Binet with some attention to tests of interest and aptitude. Report writing and ethical issues also will be covered. Prereq: admission to the graduate program in psychology or consent of instructor.

PSY 6710-3. Multivariate Statistics. Topics include canonical analysis, discriminate function analysis, and multiple regression. Prereq: admission to graduate program in psychology or consent of instructor.

PSY 6910-3. Research Practicum. PSY 6930-4 to 8. Psychology Internship. Half- or full-time placement in a setting which provides supervision by qualified professionals. Students will participate in screening, diagnosis, therapeutic
intervention and/or evaluation and research. Prereq: completion of 24 hours of course work in the CU-Denver graduate program in psychology.

**PSY 6950-3 to 6. Master's Thesis.**

**INDEPENDENT STUDY**

**PSY 4840-1 to 3. Independent Study.**
(Graduate.) Prereq: consent of instructor.

**PSY 5840-1 to 3. Independent Study.**
**PSY 6840-1 to 3. Independent Study.**
(Graduate.) A structured experience, planned and implemented with the assistance of a sponsoring faculty member in ongoing programs of research or other scholarly activity. Prereq: admission to the graduate program in psychology or consent of instructor.

**SOCIAL SCIENCE, MASTER OF**

**Director:** Jana M. Everett  
**Telephone:** 556-2436

The Master of Social Science (M.S.S.) program is designed to meet the needs of students who prefer flexibility in constructing an individualized course of study in social science. Emphasis is placed on the integration of knowledge across and beyond traditional disciplinary boundaries. This is accomplished through two required core seminars, a coherent selection of courses from a variety of disciplines, and a project report or thesis. Courses can be chosen from the social science disciplines: anthropology, economics, geography, history, political science, psychology, and sociology, as well as from other disciplines and programs, e.g., English, philosophy, education, public affairs and architecture.

The M.S.S. program is intended for students interested in developing their own interdisciplinary perspectives in such areas as public policy, women's studies, educational reform, and cross-cultural studies or politics. The program can provide: training for advancement in the professions of education, business, social service, and government; a basis for further graduate studies in a specific social science discipline or professional field; a means for teachers and other working students to tailor degree programs to fit their personal career development needs; and a non-traditional approach for adults re-entering the university to pursue liberal educational goals in the social sciences.

**Requirements for Admission**

General rules for admission into the Graduate School apply to admission into the Master of Social Sciences Program. For admission into the M.S.S. program, students should:

**For Admission as a Regular Graduate Student:**
1. Have an overall undergraduate grade-point average (GPA) of at least 2.75 out of 4.0 (for all undergraduate work).
2. Have completed at least 18 semester hours of undergraduate or graduate work in social science.
3. Submit a written statement specifying the goal of advanced study in the social sciences, expressed in clear and effective English.

Standardized test scores and samples of scholarly work are not required, but will be considered if submitted.

After meeting all other requirements for admission, applicants must interview with the M.S.S. director to discuss their interest in the program and their plans for study. For out of state applicants, an appropriate substitute for the interview may be determined by the M.S.S. director.

**For Admission as a Provisional Status Graduate Student:**

Applicants whose undergraduate GPA is below 2.75 or who have not completed at least 18 semester hours of work in social science, may be admitted as Provisional Status graduate students if their complete record indicates a high probability of success.

**For Admission as a Non-Degree Student:**

Potential applicants may take courses as non-degree students (Unclassified Student with Degree) if they:
1. Wish to strengthen their record in order to demonstrate that they can successfully complete courses in the program; or
2. Wish to start courses in the program prior to completing their application. Up to 9 hours taken as a non-degree student may be accepted by the M.S.S. program once a student has been admitted into the program (the 9 hour limit also includes graduate work from another university).

**Program Requirements**

The Master of Social Science (M.S.S.) is a 36-hour program, of which 30 hours must meet all specifications of The Graduate School. There are two required three-hour core seminars: SC 5013 and SC 5023. Up to six hours may be for thesis credit or taken as SC 6960 to complete a research project, an internship, or a work-related project. The remaining 24 hours may be individually structured with the approval of the student’s advisor and the Director of the M.S.S. Program.

There are three certificate programs within the M.S.S. program: Women’s Studies, Political Economy, and International Affairs. Further information on these programs is available from the M.S.S. director.

**Courses**

**SC 5013-3. Philosophical Problems in the Social Sciences.** Exploration into the fundamentals of the conduct of inquiry; concept formation and theory construction in the social sciences; issues related to value judgments and objectivity, social praxis, human nature, etc.

**SC 5023-3. Theoretical and Research Perspectives in the Social Sciences.** Exploration of the theoretical and research perspectives of the following disciplines: anthropology, economics, history, political science, psychology, social or economic geography, and sociology. Implications drawn for an interdisciplinary, integrated social science.

**SC 5030-3. Seminar: Studies in Political Economy.** This graduate level exploration of competing paradigms in political economy is a core seminar for students seeking a concentration in political economy and an elective for students in related graduate programs. The seminar focuses on linkages between economy, politics, and culture.

**SC 5050-1 to 3. Topics in Social Science.** These topics seminars are concerned with specialized aspects of feminist studies from various theoretical and research perspectives, which are interdisciplinary, empirically grounded, and action oriented. They also serve as a forum for discussion of individual projects and peer support.

**SC 5053-1 to 3. Topics.**

**SC 5430-3. Gender as Culture.** This course looks at ways in which implicit, conceptual, and value systems dictate gender-related behaviors in homes, work places, and particularly in educational institutions. Ongoing debates and issues are examined across disciplines to give students a sense of the gender literature as well as opportunities to think through applications and implications of current work.

**SC 5840-1 to 3. Independent Study.**
**SC 5939-1 to 6. Cooperative Education.**
**SC 6950-1 to 8. Master's Thesis.**
SOCIETY

Chair, Anthropology and Sociology:  
W. I. Griffith  
Office: NC 3012  
Telephone: 556-3557  
Faculty: Professors: Karl H. Flaming,  
Richard H. Ogles, Kjell Y. Törnblom  
Associate Professors: Richard H.  
Anderson, W. I. Griffith  
Assistant Professors: Cruz C. Torres

Undergraduate

Sociology is the scientific study of groups, social process, and behavior. The major in sociology is designed to familiarize the student with these areas through an understanding of theory, method, and statistical procedures employed within them. Concentration is possible at the undergraduate level. However, the faculty believes the undergraduate should have a foundation in the basics of the discipline upon which to build a future specialization. Such specialization is more appropriate at the advanced levels.

Many career opportunities combine a foundation in sociology with business, computer science, or community development. Opportunities within the field of sociology proper usually require graduate study. The major will prepare the student for such advanced work as well as for pursuit of career options with only the B.A. degree. For example, graduates with a sociology B.A. are employed in the human services field and with the state and local government agencies.

The department has developed the following rationale for courses offered:

1. Lower Division Courses (for majors and nonmajors)
   a. One-thousand-level courses are an introduction to the broad sociological perspective as it applies to social life, social systems, and society.
   b. Two-thousand-level courses introduce the student to somewhat more specific content areas: population study, human ecology, social psychology, etc.

2. Upper Division Courses (3000 and 4000)
   a. Three-thousand-level courses serve as advanced surveys of some specific area of concentration. They are designed to acquaint the student with the issues, methods, concepts, and theoretical frameworks employed in the content area. Such courses as urban sociology, race and ethnicity, etc. are offered at this level. Many of these courses are open courses in that students from other departments and colleges are encouraged to enroll in them.
   b. Four-thousand-level courses are devoted to a more detailed in-depth examination of specific issues, approaches and concepts within the previously identified content areas. These are advanced courses and are geared more directly to sociology and social science majors.

Requirements for the Major: A major in sociology is accomplished by completing a general core of 22 hours and a minimum of 12 hours and a maximum of 26 hours of electives in sociology for a total of 34 hours with an average grade of C in all courses. At least 16 of the 34 hours must be upper division (3000–4000 level) courses. The maximum number of hours allowed is 48.

Core Courses: The core consists of the following group of courses, all of which must be completed with a grade of C or better:

- SOC 1000-3
- SOC 3001-3
- SOC 3111-3
- SOC 3121-4
- SOC 3151-3
- SOC 3161-3
- SOC 4831-3

All prospective majors should contact the department as early in their academic careers as possible for information and for assignment to the major advisor. Transfer or returning students should consult with the department chairman concerning completion of the core courses.

The department requires that at least 12 hours of sociology be taken from CU-Denver faculty. SOC 3111, 3121, 3151, 3161, and 4831 must be taken from University of Colorado at Denver faculty.

Note: The Paralegal Certificate Program is offered in cooperation with Community College of Denver (CCD) and Arapahoe Community College. Students interested in this program should talk with the Chair of the Sociology Department about the specifics of the Paralegal Certification Program as part of the sociology major.

Requirements for the Minor: For an undergraduate minor in sociology, a minimum of 15 semester hours in sociology must be completed with a grade of C or better; 9 of these hours must be taken from CU-Denver faculty. Required courses are SOC 1001, Introduction to Sociology, and SOC 3151, Sociological Theory (must be taken from CU-Denver faculty).

Departmental Honors: Students wishing to graduate with departmental honors in sociology (cum laude, magna cum laude, or summa cum laude) must have at least a cumulative grade-point average of 3.2 and a 3.2 or higher in sociology. Additional requirements are available in the anthropology/sociology office. Qualified students are encouraged to apply for the Honors program no later than the beginning of their senior year.

Graduate

The M.A. degree in sociology offered at CU-Denver has an urban focus with an applied emphasis. The urban sociology program is designed to complement professional degree programs in design and planning, medicine, nursing, community health, physical engineering, public and business administration, education, and fine arts by providing advanced seminars and planning and research opportunities in urban theory and methodology.

Requirements for Admission:

1. General requirements of The Graduate School.
2. A combined grade-point average of at least 2.75 for all courses taken as an undergraduate or graduate prior to admission.
3. A combined grade-point average of at least 3.0 for all courses taken in sociology as an undergraduate or graduate prior to admission.
4. Three letters of recommendation.
5. A statement specifying the purpose and goal of advanced study.

Degree Requirements:

1. Completion of a minimum of 25 semester hours of approved graduate work plus a thesis to meet the requirements of the Plan I option or of 30 semester hours of approved graduate work to meet the requirements of the nonthesis Plan II option.
2. Sociological theory—3 hours (SOC 5004 or 5015)
3. Research methods—3 hours (SOC 5024 or 5035)
4. Quantitative data analysis—3 hours (SOC 5183)
5. Passing of comprehensive final examination. For further information contact the graduate director, 556-2846.
Courses

SOC 1001-3. Introduction to Sociology. A survey course in which the main concepts that define the sociological perspective are presented and a picture of society is provided by examining major social institutions and forms of social organization within society.

SOC 1030-3. Socio-Cultural Processes. Study of the relations between social and cultural processes in modern industrial societies and their impact for patterns of social relations and personal growth and development.

SOC 1050-3. Analysis of Modern Society. Examination of various sociological views of modern society including those of Lundberg, Mills, Riesman, Goffman, Sorokin, Cohen, and others.

SOC 2000-3. Introduction to Social Institutions. Organized system of practices and social roles developed about values. Machinery evolved to regulate the practices and behavior of family, church, government, economy, recreation, and education.

SOC 2010-3. Contemporary Social Issues. Consideration of controversial issues from various sociological perspectives: alienation, degradation of work, racism, sexism, ageism, class exploitation, social control, oppression and repression, imperialism, and underdevelopment. Student nomination and exploration of issues salient to him/her are encouraged.

SOC 2020-3. Race, Gender, and Class. (ETST 2054) Race and ethnicity, facts and myths about great populations, including social and cultural sources of bias and discrimination.

SOC 2030-3. Sociology of the Family. The family as a social institution. Historical development and contemporary cross-cultural analysis with emphasis on the contemporary American family.

SOC 2040-3. Sociology of Work. The analysis of work in the contemporary organizational setting. Topics covered include formal and informal organization, unionization, job satisfaction, work place modifications, and work and the non-work world. An emphasis is placed on the changing meaning of work.


SOC 2060-3. Sociology of Religion. This course is designed to introduce the student to the fundamental tenets of the sociology of religion with a basic emphasis on present-day religious cults, their beliefs, and activities in society.

SOC 2070-3. The Underclass and Social Policy. Informal and formal regulative processes in social behavior with reference to techniques and processes of social control such as propaganda, the political order and other institutions.

SOC 2080-3. Sociology of the Labor Market. Attempts to review and integrate labor market research studies, job-finding advice from recognized authorities, and findings of national employment projects. Causes of unemployment are analyzed and alternative job-search strategies are identified and discussed, with an emphasis on the Denver job market.

SOC 2090-3. Deviant Behavior. Study of the processes by which non-normative behavior, interpersonal relations, and groups of organizations are labeled in subcultures and society.

SOC 2100-3. Public Opinion and Popular Culture. The analysis of voting, opinion formation, mass communication, and popular taste.

SOC 2110-3. Divorce in American Society. Every known culture has some form of recognized divorce. This course will examine this complex marital phenomenon. Attention will be directed at assessing, among other factors, the impact of marital adjustment, family history, child custody issues, visitation rights, financial responsibilities, etc.

SOC 2120-3. Child Socialization. Through a study of the process of teaching and learning, this course explores the effects of socialization and environments on children's development. Attention is directed at the specific agencies of socialization, how they change and offer new challenges.

SOC 2210-3. Human Ecology. Introduction to human ecological processes and organization. The course examines the adaptation of human populations to social and physical environments through spatial, technological, and social organizations.

SOC 2220-3. Population and Societies. Introduction to the study of human populations, particularly modern urban, industrial societies. The course will study the basic elements of demography (natality, mortality, and migration) and the way these influence the structure and growth of the society as well as population policy.

SOC 2462-3. Introduction to Social Psychology. Study of the development and functioning of persons, especially within a group context, and the dynamics of small groups. Emphasis is on import of symbols for human behavior, development of self-concepts, and the processes of competition and cooperation in group dynamics.

SOC 2480-3. Social Movement. Social bases and development features of such modern social and political movements as communism, socialism, liberalism, and conservatism.

SOC 2500-3. Social Problems and Social Change. Sociological analysis of problems resulting from recent social changes including occupational shifts and the redefinition of work; adolescent roles and responses; public responses to crime, delinquency, and mental illness; race and minority relations; community disorganization, and the effects of population growth and redistribution on underdeveloped areas.

SOC 3001-3. Urban Sociology. The city and urban society are examined in terms of social structure, residential and institutional patternings, process of interaction, demographic processes, and patterns of growth and change.

SOC 3012-3. Social Stratification. The relations among the concentration of income and wealth, economic organization and power, power and class phenomena in the United States.

SOC 3020-3. Race and Ethnicity in the U.S. A sociological examination of race and ethnicity in contemporary U.S. society. Includes a focus on the nature and causes of prejudice and discrimination. Dominant-minority relations are examined with emphasis on current status of minority groups and issues. Prereq: 6 hours social science.

SOC 3030-3. Social Change. Process of change in Western society and its effects on the individual, communities, and economic and political institutions.

SOC 3080-3. Sociology of Sex Roles. Causes and consequences of sex role differentiation at the individual, group and societal levels. Current issues related to changing norms and values concerning gender in modern society are examined.


SOC 3100-3. Women in the Labor Market. An analysis and assessment of the current labor market for women in the Denver metropolitan area. Sociological principles are used to examine job-search strategies. Emphasis is given to those skills that women may be unaware they have.

SOC 3121-4. Statistics. (ANTH 4051, ECON 3811.) Quantitative techniques used in analyzing social phenomena. Prereq: MATH 1070 or its equivalent, or consent of instructor.

SOC 3151-3. History of Sociological Theory. An analysis of the major contributions and determinants of earlier social analysts to present-day social thought and analysis of pertinent sociological issues.

SOC 3161-3. Contemporary Sociological Theory. The explication of various conceptual approaches to the problems of social order, societal functioning and integration, social conflict, and social structural change by the examination of the work of contemporary theorists. Prereq: SOC 3151.

SOC 3200-3. Sociology of Stress and Coping. The study of occurrence and consequences of stressful life events covering symptoms and frequency of illness, groups at risk, theoretical explanations, instruments of measurement, and new research with implications for socialization and personal coping.

SOC 3220-3. Sociology of War and Peace. Examines the institutional context that results in periods of war and peace within and between macro social systems. Also examines the major issues, some historical cases and the cycles of war and peace.

SOC 3300-3. Advanced Social Problems. Social problems are the subject of controversy. The controversy may swirl around definitions (e.g., the social net and the poverty line), around degree of seriousness, about "causes," and inevitably about solutions. Controversy also centers on the "proper" role of the social theorist and social scientist, observer only or activist as well? While other disciplines study social problems, they are the very heart of the sociology perspective, and the wellspring of sociological inquiry.


SOC 3420-3. Occupational Evaluation and Change. Comparison of historical and contemporary conceptions of alienation in sociology with other perspectives in an attempt to reach a fuller understanding of the contemporary situation of human beings and their potential for growth and fulfillment.

SOC 3430-3. Occupations and Professions. The analysis of work behavior emphasizing selected occupational and professional roles, structures, characteristics, and trends.

SOC 3450-3. Communities in Society. Examines various ways of studying community behavior in urban, suburban, and small town settings. Students will have an opportunity to apply theory to an examination of an area of their concern within the community.

SOC 3460-3. The Social Psychology of Intergroup Relations. The study of those aspects of human interaction which deal with individuals perceiving themselves, and/or being perceived by others, as members of a social category. The course will focus on the dynamics of intergroup conflict—how they arise, what course they may take, and how they might be resolved. Prereq: 6 hours of sociology, psychology or any combination of the two.

SOC 3470-3. Social Psychology. An in-depth course in social psychology viewed from a sociological perspective. Major theories and current research are examined.

SOC 3480-3. Environment and Behavior. The examination of the influence of natural and man-made environments on human behavior and organization. The course addresses the manner in which values and behavior are affected by open space, buildings, and physical organization of the community. Space, community organization, and architecture also are examined as an extension of social values, behavior, and organization.


SOC 3500/3550-1 to 3. Topics in Sociology. Special topics in sociology to be selected by the instructor. Can be taken more than once when topics vary.

SOC 3600-3. Social Relations. The course has two aims: first, to improve the student's abilities to observe, analyze, and understand his own behavior and that of others in everyday interpersonal situations; and second, to improve his ability to see the small group as a social system. The student is expected to demonstrate his abilities by effective participation in his group as well as in periodic written analyses.

SOC 3720-3. Computers in Sociological Research. Designed for students who have had no statistics or computer background and desire the opportunity to learn how to use the computer in sociological investigation. It will prepare students for courses in statistics and research methods.

SOC 3939-1 to 3. Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Prereq: junior standing and 2.75 grade-point average.

SOC 4100-3. Social Assessment. This course will offer a broad survey of social assessment with a focus on the methodology, practice, and application. Special emphasis is given to the use of assessment in the examination of the social impact associated with development, natural resources, and energy products.

SOC 4210-3. Human Ecology: Energy and Society. A study of the distribution of human populations in physical and social space. Attention is directed to energy and productive forces as they shape and are shaped by the social organization of communities and societies.

SOC 4220-3. Population Change and Analysis. The sociological importance of population study. Advanced demographic analysis and population theory. Natality, mortality, problems of population growth and international and internal migrations, population policy, and aspects of population planning and control.

SOC 4230-3. City and Region. Reviews and appraises theory and research concerning the relationship of the city to its hinterland. The analysis examines institutional, demographic, and ecological patterns evolving from dynamic city-region relationships.

SOC 4240-3. Migration. The study of national and international movement of peoples. The course will examine the conditions that result in the flow of people from one kind of area to another and between nations. The effect of such movement on both the receiving and sending communities is examined.


SOC 4270-3. The Social Prison: Nineteen Eighty-Four and Other Futures. This course will look at Orwell's vision as well as those of Aldous Huxley and Arthur Koestler. The course will use the sociological works of Peter Berger, David Reisman, et al., to help interpret the novelists.

SOC 4280-3. Urban Social Space. The city simultaneously attracts and repulses us. It has openness and beauty; it is also cramped, crowded, and ugly. The city
provides us with freedoms undreamed of in other times and places, yet it restricts our movements and activities. This course will examine how different professionals have viewed the city with particular attention to the spaces in the city. Both social and physical spaces will be discussed.

SOC 4290-3. Aging, Society, and Social Policy. The role of the aged in today's society. Emphasizes interrelationships of the aged with the family, community, work, retirement, and leisure. SOC 4300-3. Professions in Society. A focus on the role and function of the professions which include adjustment, significance, and implications of their involvement in a changing society.

SOC 4310-3. Mental Health and Society. Mental health in historical perspective. Its relation to social class and the bearing of communication and value systems. The structures of mental health services in the United States.

SOC 4320-3. Sociology of Terminal Illness. Examines both institutional and interpersonal patterns of behavior in response to terminal illness. Varying cultural, religious and social responses to grief are considered. Special attention is given to the hospice movement and those whose helping occupation serve the terminally ill.


SOC 4430-3. Societies in Transition. This course concerns the processes of transition from one kind of social formation to another, for example, from capitalism to socialism. It focuses on the dialectical development of forces of social change and the agents of such change.

SOC 4490-3. Social Control. Informal and formal regulative processes in social behavior, with reference to techniques and processes of social control, such as propaganda, the political order, and other institutions.

SOC 4500-3. Advanced Study of U.S. Social Problems. Explanation of U.S. social problems arising out of class struggle between capitalists and wage workers as expressed in the following institutional areas: control of the labor process, poverty and inequality, military spending and welfare, education, criminal justice system, child care, health care, racism, and sexism.

SOC 4510-3. Advanced Study of Social Change. Historical change of societies from one epoch to another (e.g., from feudalism to capitalism) and from one stage to another (e.g., competitive capitalism to monopoly capital) with focus on attendant social processes such as development of the working class, the rise of the corporation, the expanding role of the state, the irrationality of growth, and economic crises and imperialism.

SOC 4520-3. Collective Behavior. Social, cultural, and psychological factors affecting behavior in unpredictable situations. An in-depth analysis of social change through such phenomena as riots, crowds, the public, and social movements.

SOC 4540-3. Social Mobility. Status, occupational, and income change examined from viewpoints of individual, organization, and society as a whole. Special attention to methods of analyzing change, comparative social mobility, and status equilibrium.


SOC 4710-3. Political Sociology. The analysis of political processes in modern society with emphasis on sociological conceptions of power structure, and processes, at the community, national, and international units of analysis.

SOC 4720-3. Advanced Study of Computers in Sociological Research. Introduces the uses of the statistical package for the social sciences (SPSS), a major computer software package used in sociological research. Course is a prerequisite for advanced computer in sociology seminars.

SOC 4750-3. Bargaining and Negotiation Strategies. This course will focus on the fundamentals of bargaining and negotiation strategies in organizational settings. The analysis will be confined primarily to the social psychological perspective with some emphasis on political influence in organizations.

SOC 4770/4820-3. Advanced Topics in Sociology. Advanced study of special topics in sociology to be selected by the instructor. May be repeated for credit when topics vary.


SOC 4910 1 to 3. Research Practicum. Practical experiences for undergraduates in application of principles of research design and data processing to a social research problem selected by the instructor. Consent of instructor required.

SOC 4915-1 to 8. Field Experience in Sociology. Emphasizes ethnographic techniques, intensive interviewing, direct observation, and participant observation. Students will conceptualize and execute a field research project, including data collection, analysis, and a report on some ongoing social setting. Consent of instructor required.

GRADUATE LEVEL

SOC 5004-3. Proseminar in Sociology I. Systematic review of classical subject matter and issues in sociology. Restricted to M.A. graduate students in sociology or consent of instructor.

SOC 5015-3. Proseminar in Sociology II. Contemporary sociological theory and theory construction. Restricted to M.A. graduate students in sociology or consent of instructor.

SOC 5024-3. Seminar: Research Methods I. Problems and procedures in research design, data collection, and processing. Restricted to M.A. graduate students in sociology or consent of instructor.

SOC 5033-3. Seminar: Research Methods II. Practical application of research design and methods and statistical techniques in a variety of research settings with a focus on student research projects. Restricted to M.A. graduate students in sociology or consent of instructor.


SOC 5100-3. Seminar: Sociology of Assessment. Seminar concerned with methods of assessing action programs. Basic principles of research design, measurement, and administration will be applied to situations likely to be encountered when research is conducted in an action setting. Extensive case material will be utilized.


SOC 5160-3. Seminar: Contemporary Sociological Theory. Study of contemporary sociological theory with emphasis on how it applies to related fields.

SOC 5183-3. Seminar: Quantitative Data Analysis. A research-oriented seminar stressing the utilization of social data already collected in the test or generation of sociological theory.

SOC 5190-3. Seminar: Deviant Behavior. Examination of current theory and research on deviant behavior with an
emphasizes the relationship between deviance and patterns of social exclusion.


SOC 5230-3. Seminar: City and Region. Advanced analysis of institutional, demographic and ecological patterns evolving from dynamic city-region relationships.


SOC 5400-3. Seminar: Small Group Process. Empirical and theoretical analysis of basic forms of social interaction, including such processes as attraction, conformity, cooperation, competition, social change, etc.

SOC 5430-3. Seminar: Societies in Transition. A description and analysis of changing social structures and social relationships as a response to technological innovation and change.

SOC 5440-3. Seminar: Social Stratification. Historical development of various systems of production of social surplus and its differential distribution among distinct social groups and the effects on social structure.

SOC 5450/5500-1 to 3. Graduate Special Topics. Advanced study of special topics in sociology to be selected by the instructor. May be repeated for credit when topics vary.


SOC 5610-3. Seminar: Sociology of Religion. Intensive review and analysis of the fundamental tenants of religion as a social institution with emphasis on present-day religious cults, their beliefs, and activities in society.


SOC 5710-3. Seminar: Political Sociology. Analysis of theories related to the political order from viewpoints of social structure, cultural values, and group behavior.

SOC 5720-3. Seminar: Computers in Sociological Research. Detailed and advanced techniques in the wide variety of uses of the computer in the wider range of sociological research.

SOC 5730-3. Seminar: The Urban Elderly. Intensive review and analysis of the literature and research dealing with the elderly in contemporary society.


SOC 5760-3. Seminar: Modern Marxist Social Theory. An exposition and analysis of recent Marxist social thought. Consideration is given to modern Marxist theories of class structure, political economy, alienation, culture, and the state.

SOC 5770-3. Seminar: Organizations. Analysis of theoretical and research issues in the study of organizations of all types.


SOC 5790-3. Seminar: Bureaucracy. An inquiry into the consequences of bureaucracy based on analysis of diverse theories concerning the functions of large-scale organizations.

SOC 5800-3. Seminar: Occupational Behaviors. This course will be concerned with an intensive and in-depth analysis of selected occupational roles, structures, characteristics, and trends.

SOC 5810-3. Seminar: The Professions in Society. This course focuses on the role and function of professions in the occupational world. It investigates the changing definitions of work and conflicts in the work role from the perspective of the professionals.

SOC 5820-3. Seminar: Occupational Evaluation and Change. An intensive review and analysis of the literature and research focusing on alienation in the work place that leads to redefinitions and modern evaluations of occupations.

SOC 5830-3. Seminar: Profession of Sociology. Historical and modern review of the theoretical frameworks used in sociological inquiries; review of the current methodologies and research techniques; and an emphasis on how sociologists do what they do.


SOC 5920-1 to 3. Guided Readings in Sociology.

SOC 5930-1 to 6. Internship in Sociology.


INDEPENDENT STUDY

SOC 3840-1 to 3. Independent Study. (Undergraduate.)

SOC 4840-1 to 3. Independent Study. (Graduate.)

TECHNICAL COMMUNICATION, MASTER OF SCIENCE

Director: Charles E. Beck
Office: 1015 9th Street Park
Telephone: 556-8304

The M.S. in Technical Communication prepares students for professional careers as technical communication specialists in business, industry, education, and government. With a background that combines a theoretical perspective and practical experience, graduates of this program will be able to produce documents that clearly communicate complex, often highly technical, subject matter. Technical subject matter may involve science, engineering and computer documentation; but technical communication applies to any information between experts and users or customers. Consequently, graduates will be prepared to design, write, edit, and produce a wide range of technical documents, including manuals, reports, proposals, brochures, contracts, and regulations. The curriculum draws from the expertise of an interdisciplinary faculty in English, psychology, engineering, communication, graphic arts, and business, thus encouraging applications from students from diverse academic and professional backgrounds. The intent of the program is to produce professional writers who can identify and solve communication problems.
that best meet the students' career objectives.

Students with no work experience in technical communication are required to complete a supervised internship in a corporate setting. Students with work experience must complete a master's thesis or master's project.

After completing the required course work, students must successfully complete a comprehensive examination.

**Undergraduate Prerequisite**

ENGL 3154-3. Technical Writing. This course introduces the study and writing of technical documents. The emphasis will be on the processes, style, structure, and forms of technical writing. Attention will be paid to audience analysis, organization, clarity, and precision. Prereq: ENGL 1020 or consent of instructor.

**Courses**

T C 5405-3. Technical Communication: Writing. (ENGL 5405.) This course provides intensive practice in technical writing, using simulations of professional writing situations. In a workshop featuring peer criticism, students analyze diverse audience and communication problems, including those with challenging technical content. Special emphasis will be placed on the document design process and techniques of self editing. Prereq: ENGL 3154, or consent of instructor.

T C 5505-3. Technical Communication: Editing. (ENGL 5505.) This course provides intensive practice in editing technical documents. Emphasis will be on contextual editing (i.e., editing parts of a document as they relate to the whole document and the communication purpose), as well as copy editing. Students will discuss the editor's role, review editing strategies, and examine methods of increasing document usability and readability. Special attention is given to solving readability problems syntactically and through format and design. Students also learn to communicate effectively with typesetters and printers. Prereq: ENGL 3154 or consent of instructor. Completion of T C 5405 is recommended.

T C 5605-3. Rhetorical Theory for Technical Communication. (ENGL 5605.) This course introduces students presently working as technical communicators. Prereq: T C 5405 or 5505 or consent of instructor.

**Technical Communication / 259**
TC 5950-1 to 3. Master's Thesis.
TC 5960-1 to 3. Master's Project.
TC 6950-1 to 6. Master's Thesis. Prereq: completion of required course work in the M.S.T.C. degree program and successful completion of the comprehensive examination. Consent of program director is required.
TC 6960-1 to 3. Master's Project.

THEATRE
(See School of the Arts in the College of Liberal Arts and Sciences section of this catalog.)
ARMY ROTC
Head of Program: Major Steven E. Miller
Office: Rectory Office Bldg., Room 200
Telephone: 556-3490

Army ROTC is an elective program that can lead to a commission in the active Army, the Army Reserve or the Army National Guard. The Department of Military Science offers two programs for students.

Four-Year Program

The standard four-year program consists of two phases. The basic course, normally completed during the freshman and sophomore years, consists of courses in marksmanship, rapping, land navigation/orienteering, basic military skills, leadership theory and management. During the freshman and sophomore years students participate with no obligation. The advance course coincides with the junior and senior years. Subject areas include psychology and methods of instruction, tactics and small unit operations, military law, history, national strategy, and army policies. Completion of a six-week advanced camp during the summer is required prior to commissioning.

Students should contact the Professor of Military Science (556-3490) for specific requirements and options available based on each student's status at the time of program entry. Students who are veterans of military service or participated in high school ROTC or similar organizations may have a portion or all of the basic course requirements waived by the Professor of Military Science.

Two-Year Program

The abbreviated two-year program consists of the same courses offered in the advanced course. However, both undergraduate and graduate students may become qualified for this program by successful completion of a six-week summer basic camp, or by completion of a specially designed compression course.

Scholarships

Army Reserve Officers' Training Corps.

The Department of Military Science offers students three-year scholarships. These scholarships cover all tuition and fees, an amount for books and supplies, and they provide a tax-free monthly stipend of $100. All advanced-course students (those enrolled in upper division courses) receive the $100 stipend. Upon completion of the ROTC curriculum, students are eligible for a commission in the Reserves, National Guard, or active Army.

Both ROTC and non-ROTC students, enrolled on campus as full-time students, may compete for the three-year scholarships. All scholarship benefits are tax free, and competition is open to both men and women. For more information call 556-3490, or visit the office, 200 Rectory Office Building.

Army ROTC Course Credit

Army ROTC course credit for graduation varies with each college. Students should contact the Professor of Military Science or dean of their college to clarify the number of credit hours to be awarded.

GRFD GUARANTEED RESERVE FORCES DUTY

This program provides for a guarantee that the student's obligation upon commissioning will be fulfilled as a member of the Army Reserve or National Guard instead of active duty.

Courses

MIS 101-2. Introduction to Military Science I. This is an introductory course which presents the basic makeup of the U.S. Army. Basic military skills, marksmanship, and rappelling.

MIS 102-2. Introduction to Military Science II. This course continues the development of basic knowledge and skills of military subjects begun in MIS 101 and includes first aid instruction and CPR certification.

MIS 201-3. Introduction to Leadership and Management I. This course continues development of student’s basic military skills such as land navigation/orienteering and tactical communications while examining the role of the leader in formal and informal organizations. Individual motivation, attitude formation, socialization, and interpersonal communications are also covered.

MIS 202-3. Introduction to Leadership and Management II. This course develops basic management skills in the context of the military organization while refining basic military skills necessary to enter upper division military science courses. MIS 301-2. Control Aspects of Small Unit Operations I. Designed to provide the student with an extensive exposure to ROTC advanced camp subject matter. Classroom exercises are used to present small unit tactics, communications, military skills, and practical leadership experience.

MIS 302-4. Control Aspects of Small Unit Operations II. Designed to provide the student with an extensive exposure to advanced camp subject matter. Classroom and field training exercises are used to expose the student to small unit tactics, communications, military skills, and practical leadership experience. Prer., MIS 301 and consent of instructor.

MIS 305-5. Summer Practicum. A 6-week summer practicum which will provide the advanced course cadet with the field experience and knowledge required to develop the managerial and leadership skills essential to the commissioned officer. (Advanced camp credit is optional.)

MIS 401-2. Seminar in Officer Development I. Discusses subjects which prepare the student to make a smooth transition into the U.S. Army. Topics include customs and courtesies of the service, financial planning, promotion policy, current defense issues and the status of our military posture. Prer., completion of MIS 300-level course requirements.

MIS 402-2. Seminar in Officer Development II. Contains subjects designed to develop and prepare the student for commissioning and initial duty with the active Army or Reserve Forces; assignments, career development, military justice, and
benefits of military service. Prer., completion of MIS 300-level course requirements.

AIR FORCE ROTC

Aerospace Studies

Department Office: Folsom Stadium, Room 219
CU-Boulder
Telephone: 492-8351

U.S. Air Force ROTC offers several programs leading to a commission in the U.S. Air Force upon receipt of at least a baccalaureate degree.

STANDARD FOUR-YEAR PROGRAM

This program is in three parts: the General Military Course (GMC) for lower division (normally freshman and sophomore) students; the Professional Officer Course (POC) for upper division students (normally juniors and seniors); and Leadership Laboratory (LLAB) (attended by all cadets). Completion of the General Military Course is a prerequisite for entry into the Professional Officer Course. Completion of a four-week summer training course is required prior to commissioning.

MODIFIED TWO-YEAR PROGRAM

This program is offered to full-time, regularly enrolled degree students. It requires at least two years of full-time college (undergraduate or graduate level, or a combination). Those selected for this program must complete a six-week field training program during the summer months as a prerequisite for entry into the Professional Officer Course the following fall semester.

LEADERSHIP LAB

All AFROTC cadets must attend Leadership Lab (one and one-half hour per week). The laboratory involves a study of Air Force customs and courtesies, drill and ceremonies, career opportunities, and the life and work of an Air Force junior officer.

OTHER AFROTC PROGRAMS

Other programs are frequently available based on current Air Force needs. Any AFROTC staff member in Boulder (492-8351) can discuss best alternatives. Interested students should make initial contact as early as possible to create the best selection opportunity, as selection is on a competitive basis. There is no obligation until a formal contract is entered.

AIR FORCE COLLEGE SCHOLARSHIP PROGRAM

Students participating in Air Force ROTC may be eligible to compete for Air Force ROTC college scholarships. Students selected for this program are placed on scholarships that pay tuition, book allowance, nonrefundable educational fees, and subsistence of $100 per month, tax-free. All cadets enrolled in the Professional Officer Course receive $100 per month subsistence during the regular academic year. Scholarships that are available include two, two-and-a-half, three, and three-and-a-half year scholarships. These scholarships are available to both men and women, in all academic disciplines.

FLIGHT OPPORTUNITIES

Prior to entering the fourth year of the AFROTC program, qualified AFROTC students can compete for pilot allocations. In the summer following their junior year, qualified pilot candidates generally attend the Flight Screening Program (FSP) near San Antonio, Texas.

USA MEDICAL PROGRAMS

Qualified pre-med or nursing students can compete for pre-med or nursing scholarships and programs. These scholarships and programs can lead to a rewarding career as an Air Force officer, serving as a doctor or nurse.

AFROTC COURSE CREDIT

AFROTC credit for graduation varies with each college. Students should contact the appropriate college for determination of credit.

REGISTRATION

CU-Denver students who wish to register for AFROTC classes sign up for them through the normal course registration process. AFROTC classes begin with the AIR prefix.

Courses

AIR 1010-1. Development of Air Power I.
One 1-hour lecture and one 1 1/2 -hour lab per week. This course is a study of air power from balloons and dirigibles through the jet age; a historical review of air power employment in military and nonmilitary operations in support of national objectives; a look at the evolution of air power concepts and doctrine; and an introduction to the development of communicative skills.

AIR 1020-1. Development of Air Power II.
A continuation of AIR 1010. One 1-hour lecture and one 1 1/2 -hour lab per week.

AIR 2010-1. The Air Force Today I.
One 1-hour lecture and one 1 1/2 -hour lab per week. This course deals with the Air Force in the contemporary world through a study of the total force structure, strategic offensive and defensive forces, general purpose forces, aerospace support forces, and the development of communicative skills.

AIR 2020-1 The Air Force Today II.
One 1-hour lecture and one 1 1/2 -hour lab per week.

AIR 3010-3. Air Force Management and Leadership I.
Two 1 1/2 -hour seminars plus one 1 1/2 -hour lab per week. An integrated management course emphasizing concepts and skills required by the successful manager and leader. The curriculum includes individual motivational and behavioral processes, leadership, communication, and group dynamics, providing the foundation for the development of the junior officer's professional skills (officership). Course material on the fundamentals of management emphasizes decision making and the use of analytic aids in planning, organizing, and controlling in a changing environment. Organizational and personal values (ethics), management of change, organizational power, politics, and managerial strategy, and tactics are discussed within the context of military organization. Actual Air Force case studies are used throughout the course to enhance the learning and communication process.

AIR 3020-3. Air Force Management and Leadership II.
Two 1 1/2 -hour seminars and one 1 1/2 -hour lab per week. A continuation of AIR 3010. Basic managerial processes are emphasized, while group discussions, case studies, and role playing as learning devices are employed. Emphasis on communicative skills development is continued.

Two 1 1/2 -hour seminars and one 1 1/2 -hour lab per week. This course is a study of U.S. National Security Policy which examines the formulation, organization, and implementation of national security policy; context of national security; evolution of strategy; management of conflict; and civil-military interaction. It also includes blocks of instruction on the military profession/officership, the military justice system and communicative skills. This course is designed to provide future Air Force officers with the background of U.S.
National Security Policy so they can effectively function in today's Air Force.

**AIR 4020-3. National Security Forces in Contemporary American Society II.** Two 1\(\frac{1}{2}\)-hour seminars and one 1\(\frac{1}{2}\)-hour lab per week. A continuation of AIR 4010. Special themes include defense strategy and conflict management, formulation/implementation of U.S. defense policy, and organizational factors and case studies in policymaking, military law, uniform code of military justice, and communicative skills.

### NAVY ROTC

Students at CU-Denver may participate in Naval Science courses through the Navy Reserve Officers Training Corps (NROTC). The NROTC program can lead to regular and reserve commissions in the Navy and the Marine Corp. NROTC courses are offered through the Navy ROTC offices at the University of Colorado at Boulder. Interested students should contact the CU-Boulder, NROTC at 492-2582.
Dean: Marshall Kaplan
Associate Dean: Eric D. Poole
Office: 1445 Market Street, Suite 350
Telephone: 820-5600
Director, Criminal Justice (M.C.J.): Mark R. Pogrebin
Director, Master of Public Administration (M.P.A.): Robert W. Gage
Director, Doctor of Philosophy in Public Administration (Ph.D.): Franklin J. James
Faculty: Professors: Marshall Kaplan, Peter G. deLeon, Franklin J. James, Mark R. Pogrebin, Eric D. Poole
Associate Professors: Lloyd Burton, Frank J. Cesario, Robert W. Gage, Dail A. Neugarten, E. Samuel Overman
Assistant Professors: Michael Cortes, A. W. Steve DelCastillo, Linda M. deLeon, Marjorie B. Lewis, Allan D. Wallis
Emeritus: Floyd C. Mann, Michael S. March, Leo C. Richmayer

INFORMATION ABOUT THE SCHOOL

The Graduate School of Public Affairs (GSPA) at CU-Denver is a unique institution in a unique setting. Located in the urban center of the Rocky Mountain West, its mission is to enhance the professional skills of practicing public administrators and prepare future professional managers and policy makers for service in the public and nonprofit sectors.

The School provides graduate degree programs in the fields of public administration and criminal justice, including the Master of Public Administration (M.P.A.), the Master of Criminal Justice (M.C.J.), and the Ph.D. in Public Administration. Students in the public administration program may elect to focus their studies in the fields of public management or policy. Qualified senior managers and policy makers may choose the Executive M.P.A. Option.

Most GSPA students are already well established in the public sector - the average student is in the mid-30s, functioning in a middle management capacity. Many students are city managers, heads of local or state government agencies, or government relations specialists with private corporations.

As a result, the students benefit not only from the exchange of ideas with the GSPA faculty, but from the interaction with each other. For students without public sector experience, access to a large number of experienced professionals offers a fast-track exposure to the issues and challenges currently facing the public manager.

Students may also gain a solid background in theory and practice through the applied research projects on regional, state, and community problems through GSPA’s five Centers—the Center for the Improvement of Public Management, the Center for Public-Private Sector Cooperation, the Center for Health Ethics and Policy, the National Leadership Institute on Aging, and the First Amendment Center.

The Graduate School of Public Affairs is accredited by the National Association of Schools of Public Affairs and Administration’s (NASPAA) Commission on Peer Review and Accreditation.

Functions of the School

The principal functions of the School are to provide programs of professional education, training, and service for the public sector and to undertake research on issues of concern to federal, state, and local governments.

The School provides an opportunity for selected working men and women to enhance their capabilities and potential for executive and managerial leadership in the public sector. It also offers students interested in the private and nonprofit sectors opportunities to improve their understanding of interorganizational relations and of strategies necessary to forge public-private sector partnerships.

Goals of the School

The School endeavors to:
1. Provide students with a balanced understanding of theory and practice concerning public sector management and public policy issues.
2. Provide opportunities to mid-career professionals to fine tune their skills as practitioners and advance their careers through a better understanding of the principles of public management and the policy process.

Career Expectations of Graduates

While it would be difficult to predict all of the kinds of careers graduates of this School will pursue, several major categories can be defined. In the past, those who have earned graduate degrees have filled a variety of administrative positions in federal, state, and local governments, in nonprofit organizations, and in the private sector. Some of the principal categories of career opportunities are:

1. Generalist public executives, represented by such positions as city manager, assistant city manager, director of administration, department head, assistant administrator, and administrative assistant.
2. Specialists in such fields as urban affairs, policy analysis, policy implementation, administrative planning and analysis, financial management, public-private sector partnerships, and public health.
3. Career-oriented persons who are involved in the management and analysis of government or public-private sector programs. Examples would include analysis or direction of human services, environmental protection, urban planning, and natural resource
programs; public works administrators; criminal justice planners and administrators; and analysts and administrators of cultural and artistic programs. 4. Teachers, lecturers, and professors of public administration and public policy in undergraduate or graduate colleges or university programs in political science, public policy, or public management.

**Financial Assistance**

Students in the master's degree programs are eligible for several types of financial assistance. Educational loans require application to the CU-Denver Office of Financial Aid. A number of students secure internships or other part-time positions with local, state, and federal agencies in the Denver metropolitan area. The Philip Klutznick Fund provides loans to low-income students. The Greenberg/Russo Scholarship provides assistance to minority students entering the GSPA.

The School receives a small number of fellowships from various government organizations and actively seeks additional funding for student support in the form of internship positions and research assistantships.

Veterans' benefits are also available consistent with the applicant's status and federal legislation.

A limited number of awards to support doctoral dissertation research has been available from such federal agencies as the Office of Personnel Management and the Law Enforcement Assistance Administration.

Persons interested in applying for financial assistance should inquire in the GSPA office.

**The Internship Program**

An internship for the Master of Public Administration program is required for students who have not had significant public sector experience. The purpose of the internship is to continue the linkage between theory and practice that is the philosophical basis of GSPA.

The internships generally involve part-time work. A maximum of three academic credits will be awarded for internship service.

Great care is taken by the GSPA to ensure that the internship experience meets the intellectual needs of the student. Placements have included the Governor's Office, Colorado State Legislature, Denver Mayor's Office, City of Denver, City of Lakewood, City of Aurora, Western Governor's Association, and the Denver Center for the Performing Arts.

**Admission Requirements**

1. A baccalaureate degree from a college or university of accredited standing, with a minimum grade-point average of 3.00 for the M.P.A., 2.75 for the M.C.J., and 3.0 for the Ph.D. Two sets of official transcripts of undergraduate and graduate work are required.

2. Three recommendations from qualified references. Recommendations may be by professors, employers, and/or others who are acquainted with the prospective student's professional work.

3. A satisfactory score on the aptitude test of the Graduate Record Examination (GRE) or the Graduate Management Aptitude Test (GMAT). Information about the examination may be obtained from the CU-Denver Testing Office, 556-2861.

4. Completed credentials should be received by June 1 for the fall semester, November 1 for the spring semester, and April 1 for the summer term. The application deadlines for the Ph.D. program are November 1 for the spring semester and April 1 for the fall semester.

5. Under special circumstances a student may be admitted on provisional status for a specified probationary period. At the end of this period, the student-faculty advisor will review the student's performance and recommend whether the student should be admitted to regular degree status.

6. Students who have missed the deadline for the upcoming semester may register as nondegree students. Twelve credit hours taken in the program as a nondegree student may be applied to the master's degree programs, with approval of an advisor. Nondegree student application forms are available in the Office of Admissions Processing.

7. All application materials and test scores should be sent to the Graduate School of Public Affairs, University of Colorado at Denver, 1445 Market Street, Suite 350, Denver, CO 80202.

**Limitation of Course Load**

The normal course load for a full-time student is 9 semester hours. A student who is employed full time may not carry more than 9 hours unless an excess load has been approved in advance by the faculty advisor.

**Transfer of Credit**

Up to 9 semester hours of appropriate graduate work from an accredited college or university and/or from a Department of Defense-sponsored school (e.g., Industrial College of the Armed Forces, Command and General Staff School, Army War College, Naval War College) may be credited toward all master's degrees. D.O.D. courses must be recommended by the American Council on Education.

**Time Limit**

Master's degree students must complete all course work and degree requirements within six years from registration for their first course.

**Special Centers, Institutes, and Programs**

The Graduate School of Public Affairs coordinates five centers. These Centers, originally initiated with support from the Piton and Gates Foundations, provide students and faculty with opportunities to engage in public policy research, secure internships, and develop and participate in training and technical assistance programs. Each center initiates round tables and seminars, offers technical assistance, and conducts policy analysis.

*Center for the Improvement of Public Management.* This center focuses on efforts to increase the management capacity of state and local government officials and staff. Its functions are oriented toward developing public sector leadership, management, and analytical skills.

*Center for Public-Private Sector Cooperation.* Activities are directed toward increasing understanding between the public and private sectors. Its agenda is aimed at fostering a range of collaborative efforts between state/local government and private firms.

*Center for Health Ethics and Policy.* This center conducts policy research on health issues, studies the ethical problems surrounding areas of health policy, and provides technical support to those addressing these problems in the state and nation.

*National Leadership Institute on Aging.* The institute's purposes are to assure improved policies and programs for the elderly, enhance community resource allocation decisions for the elderly, and support innovative service programs capitalizing on the combined energies and resources of the public, private, and non-profit sectors.
The First Amendment Congress. This is a prestigious national organization committed to research and education about the freedoms defined in the First Amendment to the United States Constitution. Some specific programs of The Centers held throughout the year are:

- **Rocky Mountain Program.** A 10-day residential seminar designed to offer leadership and analytical skills to mid- and upper-level officials from state and local government.
- **Rocky Mountain Management Series.** One- and two-day skill-building seminars tailored to the needs of state and local government entities.
- **Denver Community Leadership Forum.** A 10-month program designed to provide leadership and problem-solving skills for community leaders from the public sector, neighborhood and nonprofit groups, and business.
- **Western Institute for Police Administration.** A management training program for law enforcement officials.
- **Program Management Seminar and Senior Management Seminar.** Certificate programs on management skills for mid- and upper-level supervisors in Colorado state government.
- **Mediation and Facilitation Program.** A continuous program to help public and private sectors resolve community development conflicts and foster cooperative endeavors.
- **Applied Public Policy Research.** Research provided on public policy issues spanning the range from evaluations and training needs assessments to fiscal/economic impact analyses and policy studies.

**Management Certification Program**

GSPA administers a number of unique certificate programs aimed at increasing the professional skills and capacity of state and local government staffs. Graduate credit is offered on a limited and strategic basis when certificate courses go beyond training and meet graduate school academic standards. Generally, M.C.P. courses or curriculum are open as electives to GSPA students.

**Herrick S. Roth Lecture Series**

The Graduate School of Public Affairs administers the Herrick Roth Lecture Series. This endowed program brings to the campus outstanding public policy leaders for seminars with students.

**MASTER OF PUBLIC ADMINISTRATION**

The Master of Public Administration (M.P.A.) is designed to provide graduate professional education for men and women who wish to prepare themselves for careers in public management or policy in governmental agencies or in nonprofit organizations. The program also offers to those already in the public service an opportunity to pursue additional education as a means of furthering their careers. In addition to the courses offered by the Graduate School of Public Affairs, cooperating departments and schools of the University offer courses and seminars which may be included in the degree plans of graduate students who major in public administration.

**Master of Public Administration—Executive M.P.A. Option**

The Executive M.P.A. Option within the M.P.A. program is specifically designed to provide senior officials and managers education and training that improves their skills and abilities. They receive the degree, Master of Public Administration, just as regular M.P.A. students do, but they have greater flexibility in course selection than do regular M.P.A. program students. Admission to the Executive Option is highly competitive with emphasis placed on demonstrated senior level experience and leadership.

To apply, applicants need to complete an application form, submit two copies of official transcripts of all college study, submit three letters of recommendation, submit a current resume, and pay an application fee. All materials are available from the GSPA office. Executive M.P.A. applicants are not required to take an entrance examination.

In recognition of the significant experience senior administrators bring to the program, the total credit hour requirements for the Executive M.P.A. Option are reduced by 9 credit hours to a total of 36 credit hours. Students also are allowed broad discretion in the selection of their courses. They are not required to follow the core or track course requirements. Instead, students in the Executive M.P.A. Option are required to develop an individualized program of study in collaboration with their advisor. There are two required courses for students in the Executive M.P.A. Option: P AD. 5010, Fundamentals of Public Administration for the Executive M.P.A., and P AD. 6600, The Executive M.P.A. Project. Students do the Executive M.P.A. Project after completing all other course work. The Project requires the conduct of original applied research addressing a policy or management issue that the student selects. Executive M.P.A.s must also participate in a leadership development program.

**The Western Slope Program**

The Western Slope Program of the GSPA provides M.P.A. course offerings to public administrators in western Colorado. This program is offered in conjunction with Mesa State College. It is designed to develop and integrate academic and applied experiences necessary to be an effective, modern manager in the public and non-profit sectors. The courses are offered on an intensive basis on weekends on the Mesa State campus in Grand Junction and emphasize the needs of small and rural communities. Students accepted in the Western Slope Program are considered fully admitted to the M.P.A. program of the Graduate School of Public Affairs, and fulfill the same core and track courses for a total of 45 semester hours.

**The B.A./M.P.A. Degree**

The Graduate School of Public Affairs has a joint B.A./M.P.A. degree with the College of Liberal Arts and Sciences. It is designed to enable qualified students to earn a bachelor's degree from the College of Liberal Arts and Sciences and the Master of Public Administration from the Graduate School of Public Affairs in five, rather than the normal six, years. Students who wish to pursue this joint degree program should decide as early as possible in their academic careers and plan their course work carefully, as they must fulfill the requirements for graduation from the College of Liberal Arts and Sciences and follow the normal admissions procedures for the M.P.A. (including satisfactory completion of the GRE or the GMAT).

**Degree Requirements**

The minimum requirements for the basic M.P.A. degree are outlined below. Occasionally changes are made; students may graduate under the requirements which were in effect when they were admitted.

1. All students must complete a minimum of 45 semester hours of graduate credit work with a grade-point average of B or better. Students must receive a grade of B or better in all core and track
courses. If a student receives a C+ or lower grade in a core or track course, (s)he must retake the course and receive the grade of B- or better. Grades lower than a C are not counted toward a student's course requirements. Students who have not had significant work experience in the public sector or non-profit sector are required to complete an internship through an additional three semester hour course described below, bringing their total credit hour requirements to 48. All courses offered are three semester hours.

2. All students must complete the following common core courses or approved equivalents:

- PAD 5010 Fundamentals of Public Administration
- PAD 5020 Research and Analytic Methods I
- PAD 5030 Public Management and Organization Theory
- PAD 5040 Research and Analytic Methods II
- PAD 5050 Economics of the Public Sector
- PAD 5060 Public Finance
- PAD 5070 The Policy Process
- PAD 5080 Ethics in Public Administration

(PAD 5050, Economics, may be waived if the student has completed comparable graduate or undergraduate work. However, the minimum of 45 semester hours is still required.)

3. All students must complete the M.P.A. qualifying examination after completing their core courses, and before completing 30 credit hours. Students have only two opportunities to complete this requirement. The qualifying exam will cover the subject matter of all eight core classes.

4. All students, upon completing the core courses and passing the qualifying examination, must declare a track major, either the Public Management track or the Public Policy track. Students must take the following courses based upon their selection of tracks.

Public Management Track Required Courses:
- PAD 5220 Human Resource Management
- PAD 5230 Governmental Budgeting

Public Policy Track Required Courses:
- PAD 5320 Public Policy Analysis, and either
- PAD 5350 Program Evaluation or
- PAD 5310 Public Policy Formulation and Implementation

5. Following the completion of their core and track courses, all students must complete the following course:

- PAD 5361 Advanced Seminar in Public Policy and Management

6. Elective courses. Students must complete four elective courses (12 semester hours), selected with the approval of a faculty advisor. Any track course may serve as an elective. Other elective courses offered by GSPA include:

- PAD 5210 Organization Theory and Administrative Behavior
- PAD 5240 Administrative Law
- PAD 5250 Intergovernmental Management
- PAD 5330 Intermediate Statistical Analysis
- PAD 5500 Governmental Accounting
- PAD 5520 Administrative Systems Analysis
- PAD 5540 Organizational Development
- PAD 5570 Labor Relations and Public Employment
- PAD 5620 Politics of Public Sector Management
- PAD 6100 Computer Workshop

In addition, a variety of elective courses are offered under the P.A. 6600 identification, such as The Media and Public Policy and Leadership and Power.

7. Concentration areas. Students may also select their elective courses from three concentration areas described below. If a student wants to declare a concentration, (s)he must take three of the four courses listed in the appropriate group below. These selections must be made with the guidance of the advisor for the concentration area. Unless otherwise noted, all courses are three semester hours.

Health Policy Concentration
- PAD 5615 Health Policy
- PAD 5616 Health Care Ethics
- PAD 5617 Economics of Health Care Financing and Delivery
- PAD 5618 Health Services Research and Evaluation

Local Government Concentration
- PAD 5625 Local Government Management
- PAD 5626 Local Politics and Policy

Effective Resource Management
- PAD 5627

Urban Social Problems
- PAD 5628

Environmental Affairs Concentration
- PAD 5635 Seminar in Environmental Health Policy and Law
- PAD 5636 Seminar in Natural Resource Management, Policy, Regulation and Law
- PAD 5240 Administrative Law

One other elective course acceptable to environmental affairs advisor.

8. Thesis Option. The thesis option is available for M.P.A. students who have achieved an exceptional academic record and who wish to pursue independent research of a theoretical nature. The thesis may be undertaken in lieu of six credits of elective course work by students who meet eligibility requirements outlined on the M.P.A. Thesis option guidelines.

9. Internships. Students who have limited experience (generally defined as less than one year of experience) in public service must enroll in PAD 6910, Field Study in Public Administration. Other students who wish to improve or enlarge their professional skills and experience may also enroll in this class. A minimum of 240 hours of supervised work and study is required to earn three credit hours of academic credit. This requirement raises the total semester hours needed to earn the M.P.A. degree to 48.

DOCTOR OF PHILOSOPHY IN PUBLIC ADMINISTRATION

A program of professional graduate study leading to the Doctor of Philosophy in Public Administration is offered by the Graduate School of 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.

The doctoral program was developed to meet the demand for the services of people who exhibit competence in the theory, concepts, and research skills of public administration, and who are able to use them in a variety of applications. The overall purpose of the doctoral program is to add to the ranks of those who are able to increase knowledge about complex public administration systems, organizations and environments, and
public policy issues and concerns, as well as to influence the policy process. The thrust of the program is to develop the conceptual, epistemological, research, analytic, and leadership skills of its students so that they will be able to advance the study and practice of public administration in their subsequent careers. The Ph.D. is designed to prepare professionals for expanded leadership responsibilities in academia, senior management, senior research, and senior public policy roles. Accordingly, the Ph.D. integrates theory and practice and stresses skill development, along with theoretical, conceptual, methodological, and contextual knowledge development.

Participants
The doctoral program is primarily designed to serve (1) people who desire to further the field of public administration through teaching and research; (2) scholar-practitioners working in government, private sector organizations concerned with government, and nonprofit organizations who seek to improve their performance in or to move into positions that are concerned with strategic management and broad policy issues; and (3) professional and technical people (attorneys, public health professionals, court administrators, and others)—whether in the public, private, or nonprofit sector—who desire additional training that will enable them to participate more effectively in the process of administration, management, and policymaking at the highest levels.

Time Required for Ph.D. Degree
The Ph.D. program requires intensive commitment. It is designed to link advanced education, research and training with the practice of public management and policy development. Accordingly, most courses and seminars are offered during the evening hours, on weekends, or on an intensive basis. Anyone starting a Ph.D. program with a master's degree in public administration can expect to take at least three years to complete all of the requirements for the Ph.D. All requirements for the Ph.D. should be completed within six years from admission. Any student entering the program with no prior graduate work in public administration should expect at least one additional year of course work.

Admission Requirements
It is desirable that a student have a master's degree in at least one related field before undertaking doctoral work. If a student does not have an M.P.A., he or she will in most cases have to take some M.P.A. course work and meet threshold M.P.A. degree knowledge. Standard GRE scores are required. It is desirable that entering students have at least three years of responsible administrative experience in a government agency, quasi-public institution, or not-for-profit organization. Substitutes in the private sector are possible, particularly if they reflect positions of senior management responsibility.

Selection Criteria
Admission to the program is based on the personal and professional qualifications of the applicant. It also reflects the objectives of the GSPA faculty to achieve a productive and stimulating balance between academic background and achievements and relevant professional backgrounds, interests, and experience of students. Basic eligibility for admission is premised upon the following considerations:
1. Formal academic record and visible achievements concerning scholarship.
2. Graduate Record Examination or similar scores.
3. The depth and breadth of the applicant's professional work experience.
4. Potential for career advancement and capacity to contribute to the overall academic program.
5. Potential to benefit from an integrative classroom/work experience.
7. Personal interviews.

Application Process
Applicants must submit the following items to the GSPA office before they can be formally considered for admission:
1. Application forms (available from GSPA).
2. Official transcripts for all undergraduate and graduate work.
3. Graduate Record Examination scores.
4. Current resume or vita.
5. Minimum of three letters of recommendation from colleagues and previous professors, focusing on potential for (a) future executive leadership and (b) deriving benefit from the Ph.D. program.
6. A 500–1,000 word statement of educational and career goals.

In addition, a student may submit samples of research reports or publications. All application materials will be retained by GSPA and will not be returned.

Degree Requirements
The Ph.D. program consists of a minimum of 90 credit hours of appropriate course work beyond the bachelor's degree. Master's level course work for a maximum of 30 hours can be transferred in or taken at GSPA. An additional 30 hours of appropriate doctoral level course work must be taken at the University of Colorado. Finally, 30 hours are required for dissertation credit.

PREREQUISITE COURSES
All students must have the following prerequisite courses, parallel courses offered on the Colorado Springs campus of the University of Colorado, or their equivalent (i.e., comparable course work taken elsewhere as determined by the Ph.D. director):

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PAD 7010</td>
<td>Fundamentals of Public Administration</td>
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<tr>
<td>PAD 7020</td>
<td>Research and Analytic Methods I</td>
</tr>
<tr>
<td>PAD 7030</td>
<td>Public Management and Organization Theory</td>
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<tr>
<td>PAD 7040</td>
<td>Research and Analytic Methods II</td>
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<td>PAD 7050</td>
<td>Economics of the Public Sector</td>
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<td>PAD 7060</td>
<td>Public Finance</td>
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<td>PAD 7070</td>
<td>The Policy Process</td>
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<tr>
<td>PAD 7080</td>
<td>Ethics in Public Administration</td>
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COMMON COURSES
All Ph.D. students must take the following courses:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PAD 8010</td>
<td>Doctoral Seminar on the Discipline and Profession of Public Administration</td>
</tr>
<tr>
<td>PAD 8020</td>
<td>Doctoral Seminar on Public Management or Public Policy</td>
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<tr>
<td>PAD 8060</td>
<td>Doctoral Seminar on the Conduct of Empirical Inquiry</td>
</tr>
<tr>
<td>PAD 8070</td>
<td>Advanced Research Seminar Methodological, and Language Proficiency</td>
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</tbody>
</table>
All students must complete 6 graduate credits in a specific methodology, i.e., Intermediate Statistics, Legal Research, or Qualitative Research. See Ph.D. director for details.

**Ph.D. CURRICULUM**

The program has two tracks: public management and public policy. An individualized track will be considered with the specific approval of the Ph.D. director. Within each option, a student is required to have a concentration in a substantive, management or policy analysis area.

All students must pass preliminary and comprehensive examinations before they can be admitted to candidacy. First, they must pass a preliminary examination in general public administration and public policy. This examination covers the entire field of public administration and will not necessarily be limited to the content of the required courses. Ph.D. students must pass their qualifying examination before they can take the comprehensive examination.

Second, they must choose an option track, take appropriate courses, and pass a comprehensive examination in their chosen option.

To qualify for an individualized track, the Ph.D. student must (1) develop a proposed plan of study for a specialty area which cannot be pursued adequately within either of the other two options, (2) include in the plan of study an adequate series of doctoral level university courses which can be taken on-site, and (3) obtain the written approval of the plan from the Ph.D. director.

**DISSERTATION**

Students are advanced to candidacy for the Ph.D. once they have completed all required course work and examinations and have been certified for candidacy by the program director. When students are formally advanced to candidacy, they must register for dissertation research each fall and spring semester until graduation. In general, a dissertation is a demonstration that a candidate for the doctoral degree is capable of doing independent, original scholarly and professional research that constitutes a contribution to knowledge in the broadly defined discipline of public administration.

Further details on the program can be found in the *Handbook for the Doctor of Philosophy in Public Administration Program* available from the Graduate School of Public Affairs.

**Courses**

In the following double numbering system, a master's level student must enroll in the 5000/6000-level course and a doctoral student must enroll in the 7000/8000 level course.

**P AD 5010/7010-3. Fundamentals of Public Administration.** Examines the history, nature, and scope of American public administration. This course defines the policy-making process, administrative structures, intra- and inter-organizational dynamics and legislative/executive policy issues in the field, including administrative responsibility and ethical concerns. Prereq: P AD 5020/7020-3. Research and Analytic Methods I. (Same as C J 5020/7020) Introduces students to probability theory, descriptive and inferential statistics. It includes an introduction to statistical package for the social sciences (SPSS) for the analysis of primary and secondary data. A statistics laboratory is included. Note: students may waive this course if they have taken an appropriate undergraduate or graduate level statistics course or can pass a competency examination offered by GSPA.

**P AD 5030/7030-3. Public Management and Organization Theory.** Introduces principles and techniques of managing public organizations, with attention to the structural and behavioral theories on which they are based. Methods of organizing, planning, financing, coordinating, controlling, and monitoring compliance and accountability are treated, as are behavioral issues of leadership, communications, decision making, and motivation. Prereq: P AD 5040/7040-3. Research and Analytic Methods II. (Same as C J 5040/7040.) Provides an overview of methods and techniques used in the collection and analysis of data and develops skills in problem formulation. Methods covered may vary but will typically include survey research, experimental design, forecasting, network analysis, and decision analysis.

**P AD 5050/7050-3. Economics of the Public Sector.** Covers basic concepts of microeconomics and their applicability to the allocation of resources in the public and private sectors, the evaluation of efficient and optimal resource use, public goods theory, the role of government in the economy and a limited introduction to macroeconomics and fiscal/monetary policies as they affect public administrators.

**P AD 5060/7060-3. Public Finance.** Examines the economic theory of the responsibilities of the public sector, public choice, and the principles of public sector resource allocation. This course includes cost benefit analysis, budgetary systems, taxation, and intergovernmental fiscal relations. Prereq: P AD 5050/7050.

**P AD 5070/7070-3. The Policy Process.** Presents an interdisciplinary model of the general policy process and its application to specific practical policy problems using a six-step model of the policy process. Examines the policy analysis craft and various tools that are utilized in policy analysis.

**P AD 5080/7080-3. Ethics and Public Administration.** Describes ethical principles and institutions, codes of ethics, standards, and values. Prereq: P AD 5050/7050. Note: students may waive this course if they have taken an appropriate undergraduate or graduate level ethics course or can pass a competency examination offered by GSPA.

**P AD 5210/7210-3. Organization Theory and Administrative Behavior.** Provides advanced knowledge of the interdisciplinary nature of organizational and interorganizational management. Draws on basic literature from organization theory, administrative behavior, organizational sociology and political science in focusing on the bureaucratic and social behaviors in and around complex organizations. Prereq: P AD 5030/7030.

**P AD 5220/7220-3. Human Resources Management.** Examines the nature of work relationships between people and organizations, systems and processes for human resource management, manpower planning, collective bargaining, and strategies for human resources development. Prereq: P AD 5030/7030.

**P AD 5230/7230-3. Governmental Budgeting.** Focuses on budget systems, processes, and policy issues with respect to federal, state, and local governments. Some practical budget-making exercises are conducted. Prereq: P AD 5060/7060.

**P AD 5240/7240-3. Administrative Law.** Examines the development of American administrative law, its relationship to regulations and legislative/administrative processes. Studies the nature of the legal process and its compatibility with the administrative process. Includes exposure to the regulatory process and its impact on the delivery of public programs.

**P AD 5250/7250-3. Intergovernmental Management.** Surveys the basic literature of intergovernmental management and examines the interactive role of managers at federal, state, and local levels of government. Emphasis is placed on current intergovernmental issues.
Introduces students to the public policy process with specific emphasis on models of policy formulation and implementation. Examines program development and execution in the context of political, economic, and institutional environments. Using case studies, the course identifies criteria that can be used to determine the efficiency and effectiveness of public policies and programs.

Provides training in the systematic analysis of policy and program initiative using the case method. The course covers benefit-cost analysis, cost-effectiveness analysis, present values, and the treatment of multiple criteria in public sector program analysis. Prereq: P AD 5060/7060 and 5020/7020.

Develops basic competence in multivariate statistical analysis. Topics include simple and multiple regression, hypothesis testing, use of dummy variables, and logical analysis. Includes an introduction to non-parametric statistics. Prereq: P AD 5020/7020.

P AD 5340/7340-3. Intergovernmental Policy.
Examines the economics of federalism and analyzes intergovernmental fiscal relationships. Describes the theories and rationale of fiscal aid policies and the results of such programs in equalizing fiscal resources and achieving national objectives. Includes exposure to the range of federal assistance, tax policies and coordination, borrowing and debt, mandating and tax expenditure limitations. Prereq: P AD 5310/7310 and P AD 5320/7320.

Describes the theory and methodology for the design of social research and demonstration projects and the application of analytical and statistical methods for evaluating public programs. Focuses on the application of evaluation methods and techniques of data interpretation. Reports preparation is emphasized. Prereq: P AD 5020/7020 and P AD 5040/7040.

P AD 5361/7361-3. Advanced Seminar in Public Policy and Management.
Integrates knowledge and skills of the common core and track requirements. This course emphasizes the application of management theories and practices to actual issues/problems of public organizations. It also emphasizes the application of policy analysis to public programs through the design and implementation of a policy or program evaluation project. (This integrative seminar is to be taken only after all common core and track requirements have been completed.)

P AD 5500/7500-3. Governmental Accounting.
Accounting for governmental administrators, including use of accounting systems by the public manager, accounting theory and principles, basic accounting methods, such as double-entry accounting, trial balances, financial statements, and their analysis.

Analysis, diagnosis, and evaluation of administrative organizations and operations at various levels of government. Special attention to the appropriateness of organizations and operations in relation to goals. Students work with government agencies in making analyses, evaluations, and recommendations. Prereq: P AD 5210/7210.

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 required. Prereq: P AD 5210/7210.

Relationships between public employees and their employers reflecting the change from a localized concern to the more generalized concern of the nation's affairs; analysis of the evolution of management and worker organizations in government at all levels and their involvement in collective bargaining with or without legal controls.

An examination of historical development of labor management relations, the theories of labor relations, analysis of labor organizations, the legal basis for public labor relations, the negotiating process, analysis of labor contract implementation, development and resolution of labor disputes.

This course will review the environmental, social, and economic problems facing America's cities, particularly those in Colorado. It will examine alternate options cities can use to respond effectively and equitably to their difficulties.

P AD 5615/7615-3. Health Policy.
Provides an introduction to public policy issues in the health care sector and examines the politics and processes of health policy development. It examines the institutional structure of health care services industry including providers, public programs, and private insurers. Considers questions of appropriate delivery of health care.

P AD 5616/7616-3. Health Care Ethics.
Explores methods and basic theories of decision-making in major biomedical areas of reproduction, illness, and dying. Considered will be issues of consent, truth telling, euthanasia, abortion, alternative methods of reproduction, genetics, confidentiality, human experimentation and allocation of resources. Medical and legal considerations will be explored in a non-technical manner.

P AD 5617/7617-3. Economics of Health Care Financing and Delivery.
An economic framework is developed for analysis of public policy alternatives. Fundamental policy questions such as the roles of competition and regulation; policy alternatives such as national health insurance, are considered in the context of how they affect the allocation of resources in the health care sector and ultimately quality of and access to care. Prereq: P AD 5050 or equivalent economics course.

This course focuses on methods of research and evaluation in the health care area. Recent health services research on a wide range of topics is critically reviewed from both methodological and substantive standpoints. Prereq: P AD 5040, 5330, 5717.

Examination of the politics of urban and public management; citizen participation in administrative decisions; managerial competition for limited resources; long-range planning in a political system; and the conflicts between urban politics and administrative efficiency.
P AD 5627/7627-3. Effective Resource Management. This course relates a number of resource management concepts to the local government setting. Subjects covered include urban economics, revenue structures, taxation theories, welfare and public choice economics, local government budgeting systems, financial planning and control, and modern debt financing mechanisms used in local government.

P AD 5628/7628-3. Urban Social Problems. Examines local government from the perspective of sociology and group dynamics. Course could include some or all of the following subjects: neighborhoods and community groups, class and race relations, community crime, social service issues, immigration, the underclass in American society, and related urban social problems.

P AD 5635/7635-3. Environmental Health Policy, Regulation and Law. This is a seminar in how environmental health policy is formulated by legislatures, implemented by regulatory agencies, and interpreted by the courts. Concentrating primarily at the federal level, it carefully examines the policy, regulation, and law of air and water quality, toxic and hazardous waste control, and solid waste management. It will explore similarities and distinctions in environmental policy, and selected special topics.

P AD 5636/7636-3. Seminar in Natural Resource Management, Planning and Law. This seminar will focus on the formulation, implementation and enforcement of federal and, to a lesser extent, state policies concerning the management of natural resources. Subject areas covered will include water resource allocation, minerals, forest and range resources, wilderness and wildlife, and public lands and land use.

P AD 6100/7100-3. Computer Workshop. A broad introduction to the world of computers and computing in public administration with emphasis on microcomputers. Topics include computer systems, basic programming, word processing, spreadsheet analysis, data base management systems, and applications. Considerable hands-on experience is provided.

P AD 6110/7110-3. Computer Applications in the Public Sector. Develops skills in using computers to manage information and solve problems, with emphasis on microcomputers. Specific topics vary, and may include budgeting, economic modeling, municipal bond analysis, population projection, crime pattern analysis, as well as others. Use of existing software packages is emphasized.

P AD 6120/7120-3. Information Resource Management. This course provides an introduction to material on informative resource management. It is directed specifically to users and managers of computer systems, rather than operators or programmers. It is oriented primarily toward computerized public sector applications. The course provides the techniques required by public managers to plan and improve information systems in the public sector.

P AD 6121/7121-3. Behavioral Foundations of Management. Topics presented in this course include communication skills covering oral/listening/questioning techniques; group development covering team building/conducting meeting techniques; and problem solving and decision making including critical thinking, interpersonal/group problem solving processes.

P AD 6122/7122-3. Supervision and Human Resource Development. Covers technical personnel functions such as recruitment, exams, selection, classification, and compensation; job design, motivation, performance, and performance planning and training.


P AD 6130/7130-1 to 3. Workshop in Public Administration. Mini courses to develop skills in public administration.

P AD 6600/7600-3. Special Topics in P AD. A study on special topics relevant to public administration such as public/private sector partnerships, hard choices facing America, conflict management, regionalism, managing economic options for Colorado, nonprofit management and marketing. Each semester various topics are studied.

P AD 6910-3. Field Study in Public Administration. For students who have not had government experience. Studies and reports are made while students have full-or part-time administrative traineeships, internships, or similar positions in government agencies or government-related organizations. Prereq: completion of the common core courses. It is recommended that at least three of the track courses also be completed.


P AD 8010-3. Seminar on the Discipline and Profession of Public Administration. A historical overview course on developments and changes in public administration as a societal phenomenon and a field of study. Examined will be how public administration has evolved and is defined, practiced, studied and taught. Must be taken during first semester of Ph.D. program. Students with no previous public administration course work will be required to have had at least the equivalent of an introductory course in public administration before enrolling in this seminar.


P AD 8060-3. Seminar on Conduct of Empirical Inquiry. Examines a range of empirical approaches used in the study of public policy and management. Introduces some of the major concepts and problems of scientific inquiry; explores relevant aspects of the philosophy of science and further develops skills in the design, conduct, and use of research. Prereq: P AD 5020 and 5040.

P AD 8070-3. Advanced Seminar in Research Methods. This course provides in-depth knowledge about designing and conducting dissertation research. The course will follow a basic sequence of problem definition, theoretical and propositional formulation, sample selection, data collection and observational methods, data analysis and presentation, and writing up results. Students must have taken P AD 8060 and be at the dissertation stage of their program.

P AD 8071-3. Research and Resources in Public Administration. All students must complete (or test out of) this course which will not count toward the minimum 84 credit hours required for graduation. The course will be offered each year by the office of public affairs librarian of the Auraria library. The objective of the course will be to provide doctoral students with library research skills needed to locate, use, and evaluate both primary and secondary source materials. Techniques, rather than titles, will be emphasized and dissertation formats will be reviewed.

P AD 8990-1 to 10. Doctoral Dissertation. Once students are admitted to candidacy, they must be continuously registered for dissertation credit each fall and spring
semester or be automatically dropped from the program. Part-time students must register for 7 credit hours a semester; full-time students for 10. In cases where students will not be using any university resources during a particular semester, they may petition the DPA director to register for only 3 credit hours in order to maintain continuous enrollment. Students must be registered for dissertation credit during the semesters they have a colloquium or defense.

Independent Study

P AD 8840-1 to 6. Independent Study. (Doctoral level) Affords students the opportunity to do independent, creative work. Prereq: consent of advisor. P AD 6840-1 to 6. Independent Study. (Master's level) Affords students the opportunity to do independent, creative work. Prereq: consent of instructor.

MASTER OF CRIMINAL JUSTICE

The Master of Criminal Justice (M.C.J.) 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, capability for design of research must be developed along with the skills required in the ordering and analysis of empirical data. This course of study will also prepare the student to be an innovator in the criminal justice process from detection of crime and arrest of suspects through prosecution, adjudication, sentencing, and imprisonment to release. The patterns of decision and practices are reviewed in the context of the entire criminal justice system.

Degree Requirements

1. The program leading to the M.C.J. degree requires a minimum of 36 semester credit hours of appropriate graduate study with a grade average of B or better. No grade below C will be accepted for graduate credit.

2. The completion of the following core courses is required:

   - C J 5000 Law and Social Control
   - C J 5040 Research and Analytic Methods I
   - C J 5100 Criminal Justice Administration
   - C J 5110 Criminal Justice Planning and Evaluation
   - C J 5120 Nature and Causes of Crime

3. Students must complete a minimum of 21 semester credit hours of course work in criminal justice.

4. Students who have not had criminal justice experience are required to complete C J 6910 (Field Study). A minimum of 240 hours of supervised work is required to earn 3 hours of credit.

5. Completion of either a thesis/project or a comprehensive written examination taken during the last semester of enrollment is required. An oral examination based on the material covered in the thesis may be required at the option of the student’s thesis committee.

ELECTIVE COURSES

The courses listed below may be utilized as electives for the M.C.J. degree:

- C J 5310 Seminar in Criminal Justice Management
- C J 5320 Seminar in Police Administration
- C J 5321 Research in Criminal Justice Process
- C J 5510 Seminar in Contemporary Law Enforcement
- C J 5520 Seminar in Correctional Administration
- C J 5530 Seminar in Community Corrections
- C J 5540 Juvenile Justice Administration
- C J 5550 Seminar in Criminal Justice Policy Analysis
- C J 5551 Seminar in Judicial Administration and Organization
- C J 5560 Seminar in Comparative Criminal Justice
- C J 5570 Advanced Seminar in Criminal Justice
- C J 6600 Special Topics in Criminal Justice Administration
- C J 6950 Area Paper or Thesis
- C J 6960 Seminar in White Collar Crime
- C J 6965 Seminar in Criminal Justice Ethics

C J 6700 Seminar in Career Criminals
C J 6750 Qualitative Research Methods

Courses

- C J 5000/7000-3. Law and Social Control. A general introduction to the nature of law, legal institutions, and legal processes as one among multiple systems of social control; consideration of various theories of interpretation, application, and enforcement of law; the structure and function of legal institutions.

- C J 5020/7020-3. Statistics for Criminal Justice. Introduces students to probability theory, descriptive and inferential statistics. It includes an introduction to statistical packages for social sciences (SPSS) for the analysis of primary and secondary data. A statistics laboratory is included. Note: students may waive this course if they have taken an appropriate undergraduate or graduate level statistics course or can pass a competency examination offered by GSPA.

- C J 5040/7040-3. Research and Analytic Methods I. (Same as P AD 5040/7040). Provides an overview of methods and techniques used in the collection and analysis of data, and develops skills in problem formulation. Methods covered may vary but will typically include survey research, experimental design, forecasting, network analysis, and decision analysis.

- C J 5100/7100-3. Administration of Criminal Justice. Analysis of 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 decision and practices are reviewed in the context of the entire criminal justice system.

- C J 5110/7110-3. Criminal Justice Planning and Evaluation. Techniques for assessing the probability and desirability of future possible states of society, and particularly of social control systems, will be considered in relation to the goals of the criminal justice system.


- C J 5310/7310-3. Seminar: Criminal Justice Management. This course is designed to provide the student with an overview of organizational theory and
administrative behavior. In particular, different schools of thought and management approaches will be studied to improve organizational efficiency and effectiveness in criminal justice agencies. Case studies in a variety of agency settings will be utilized.

C J 5520/7520-3. Seminar: Police Administration. The role of the police in a rapidly changing society, relationship between police services, the courts, and correctional administration.

C J 5521/7521-3. Research in the Criminal Justice Process. Examination of current research in criminal justice; problems in the implementation of research findings.

C J 5510/7510-3. Seminar: Contemporary Law Enforcement. Strategies for implementing new programs directed at social control and crime prevention. Experiences in programmatic innovations and revolutionary interventions in law enforcement administration; case histories of past efforts at radical change and experimentation, emphasis on implementation strategy and consequences of innovation.


C J 5540/7540-3. Juvenile Justice Administration. Policies and practices of agencies in processing young persons through the juvenile court system; trends in juvenile justice; examination of disposition of cases by probation; foster home placement, training schools, and transfer to adult correction programs.

C J 5550/7550-3. Seminar: Criminal Justice Policy Analysis. This course deals with crime as a national political issue and examines how conflicting political philosophies influence criminal justice policy changes in both the federal and state levels. (e.g., New York minimum sentencing for drug offenders, omnibus crime control, and safe streets act.)

C J 5551/7551-3. Seminar: Judicial Administration and Organization. An analysis of judicial organization, court administration, and criminal court judges as participants in the operation of the criminal justice process; attention to the prosecutor and public defender systems.


C J 5570/7570-3. Advanced Seminar: a study of contemporary problems relevant to criminal justice, taught by highly qualified persons on the particular subject matter. Each semester a different problem is studied.


C J 5590/7590-3. Field Study in Criminal Justice. For students who have not had practitioner experience, a full- or part-time internship is required. Consent of instructor. Prereq: 12-15 hrs of criminal justice course work.


Independent Study

C J 6840-1 to 6. Independent Study. (Master's level) Affords students the opportunity to do independent creative work. Prereq: consent of advisor.

C J 8840-1 to 6. Independent Study. (Doctoral level) Affords students the opportunity to do independent creative work. Prereq: consent of advisor.
Note: This roster lists faculty members holding regular and special appointments during the 1991-92 academic year. New 1992-93 appointments are not finalized at the time of printing.

HARRIET ABLE-BOONE, Assistant Professor of Education. B.S., Presbyterian College; M.A., Furman University; Ph.D., Vanderbilt University.

RICHARD H. ANDERSON, Associate Professor of Chemistry. B.A., University of Hawaii; M.A., M.S., Ph.D., University of Illinois.

ERNEST ANDRADE, JR., Professor of History. B.A., M.A., University of Hawaii; Ph.D., Michigan State University.

MARCELLE V. ARAK, Professor of Finance. B.A., University of Rochester; Ph.D., Massachusetts Institute of Technology.

GEORGE Z. ARASIMOWICZ, Assistant Professor of Music. A.R.C.T., Royal Conservatory of Toronto (Canada); B.Mus., University of Toronto (Canada); B.A., Carleton University (Canada); M.A., McGill University (Canada); Ph.D., University of California, San Diego.


B. THOMAS ARNBERG, Associate Professor Emeritus of Mechanical Engineering. B.S., M.S., University of Colorado. Professional Engineer: Colorado.

W. GRAHAM ASTLEY, Associate Professor of Management. B.A., M.B.A., University of Liverpool (England); Ph.D., University of Washington, Seattle.

BRIAN ATKINSON, Senior Instructor in Electrical Engineering. B.S., Colorado School of Mines; M.S., University of Colorado.

GERALD J. AUDISIRK, Associate Professor of Biology. B.A., Rutgers University; Ph.D., California Institute of Technology.

Teresa E. AUDISIRK, Associate Professor of Biology. B.S., Bucknell University; Ph.D., University of Southern California.

C. FERNE BACA, Dean of the Graduate School; Associate Professor of Education. B.A., University of Northern Colorado; M.A., Ph.D., University of Colorado.

JO-ANNE BACHOROWSKI, Assistant Professor of Psychology. A.B., College of the Holy Cross; M.S., Ph.D., University of Wisconsin, Madison.

AJEYO BANERJEE, Assistant Professor of Finance. B.A., M.S., University of Delhi, India; M.B.A., Ph.D., University of Massachusetts.

HEN-HSIENT BAO, Assistant Professor of Accounting. B.A., Fu-Jen Catholic University (Taiwan); M.B.A., University of Southern California; Ph.D., University of Missouri, Columbia.

GORDON G. BARNEWALL, Professor of Marketing. B.S., University of Colorado; M.B.A., Ph.D., Ohio State University.


PAUL BAUMAN, Associate Professor of Education. B.A., University of Nebraska; M.A., University of Wyoming; Ph.D., University of Colorado.

KATHLEEN BEATTY, Dean, Graduate School of Public Affairs, Colorado Springs. Ph.D., Washington State University.

CHARLES BECK, Associate Professor of English. B.A., University of Pittsburgh; M.A., St. Mary's University; Ph.D., University of Denver.

STEVEN BECKMAN, Assistant Professor of Economics. B.A., M.A., Ph.D., University of California, Davis.

KENNETH L. BETTENHAUSEN, Assistant Professor of Management. B.S., Ph.D., University of Illinois at Urbana-Champaign.

BRUCE W. BERGLAND, Executive Vice Chancellor; Associate Professor of Education. B.S., Iowa State University; Ph.D., Stanford University.

JOY L. BERRENBERG, Assistant Professor of Psychology. B.A., M.A., Ph.D., University of Colorado.

SAMUEL A. BETTY, Associate Professor of Communication. B.A., Spring Hill College; M.S., University of Illinois; Ph.D., Michigan State University.

JAN BIALASIEWICZ, Associate Professor of Electrical Engineering. M.S., Warsaw Technical University (Poland); Ph.D., D.S., Silesian Technical University (Poland). Professional Engineer: Colorado.

ERROL L. BIGGS, Instructor in Health Administration. B.A., Simpson College, Iowa; M.B.A., George Washington University; Ph.D., Pennsylvania State University.

KERRANNE G. BILEY, Instructor and Reference Librarian, Auraria Library. B.A., University of Colorado; M.L.S., University of California, Los Angeles.

HEIDI BOERSTLER, Assistant Professor of Health Administration. B.A., Northwestern University; B.S., Johns Hopkins University; M.N., University of Washington; M.P.H., Dr. P.H., Yale University; J.D., University of Denver.


JEAN-CLAUDE BOSCH, Associate Professor of Finance. B.A., ETACA (France); M.B.A., Ph.D., University of Washington.
J. BRADLEY BOWLES, Associate Professor of Theatre. B.A., North Texas State University; M.A., Louisiana State University; Ph.D., University of Iowa.

RICHARD C. BOX, Assistant Professor of Public Affairs. B.S., M.S., South Oregon State College; M.P.A., Golden University; D.P.A., University of South California.

KATHY BOYD, Assistant Professor of Public Affairs. B.S.W., M.P.A., University of Wyoming; D.P.A., University of Arizona.

WILLIAM L. BRIGGS, Chairman of Math­ ematics, Associate Professor of Math­ ematics. B.A., University of Colorado; M.S., Ph.D., Harvard University.

LOIS A. BRINK, Director and Associate Professor of Landscape Architecture. B.A., M.L.A., University of Pennsylvania. ALAN P. BROCKWAY, Chairman for Biology, Professor of Biology. B.A., St. John's College; Ph.D., Western Reserve University.

LLOYD BRODSKY, Assistant Professor of Information Systems. B.A., Vassar College; M.B.A., University of California, Berkeley; M.S., University of California, San Francisco; Ph.D., Massachusetts Institute of Technology.

PETER G. BRYANT, Associate Professor of Management Science and Information Systems. A.B., Harvard University; M.S., Purdue University; Ph.D., Stanford University.

JOHN C. BUECHNER, Chancellor, University of Colorado at Denver; Professor of Public Affairs. B.A., College of Wooster; M.P.A., Ph.D., University of Michigan.

REX S. BURNS, Professor of English. B.A., Stanford University; M.A., Ph.D., University of Minnesota.

LLOYD BURTON, Associate Professor of Public Affairs. B.A., Prescott College; M.A., San Francisco State University; B.S., Ph.D., University of California, Berkeley.

ROXANNE M. BYRNE, Associate Professor of Mathematics. B.S., M.S., Ph.D., University of Colorado.

THERESA CAMERON, Assistant Professor of Urban and Regional Planning. B.A., State University of New York, Buffalo; M.U.P., University of Michigan, Dr.D., Harvard University.

CORRINE H. CAMPBELL, Assistant Pro­ fessor of Chemistry. B.A., California State University; Ph.D., University of California, Los Angeles.

DOLORES GAIL CAMPBELL, Senior Instructor in Communication. B.A., University of South Carolina; M.A., University of Northern Colorado; M.A., University of Northern Colorado; Ph.D., University of Denver.

ALAN CANTER, Associate Professor Adjunct of Urban and Regional Planning. B.A., City College of New York.

WAYNE F. CASCO, Professor of Manage­ ment. B.A., College of the Holy Cross; M.A., Emory University; Ph.D., University of Rochester.

M. KENT CASPER, Director, Master of Humanities; Associate Professor of German. B.A., University of Utah; Ph.D., Harvard University.

FRANK J. CESARIO, Associate Professor of Public Affairs. B.S., University of Massachusetts; M.S., Montana State University; Ph.D., Ohio State University.

FREDERICK B. CHAMBERS, Assistant Professor of Geography. B.A., University of California, Los Angeles; M.A., California State University; Ph.D., Arizona State University; Tempe.

NIEN-YIN CHANG, Chairman for Civil Engineering, Professor of Civil Engineering. B.S., National Chung-Hsing University (Taiwan); M.S., National Taiwan University (Taiwan); Ph.D., Ohio State University. Professional Engineer: Colorado, Ohio.

WILLARD R. CHAPPELL, Professor of Physics. M.A., Harvard University; B.A., Ph.D., University of Colorado.

G. MIKE CHARLESTON, Associate Pro­ fessor of Education. B.B.A., M.A., University of Oklahoma; Ph.D., Pennsylvania State University.

FU HUA CHEN, Professor Adjunct of Civil Engineering. B.S., University of Michigan; M.S., University of Illinois; Honorary Doctorate of Science, Colorado State University. Professional Engineer: Colorado, Utah, Wyoming.

Ji CHEN, Instructor in Finance. B.S., Da­ lian Institute of Technology, (PRC); M.A., Liaoning University, (PRC); M.B.A., University of Denver.

WILLIAM CHEROWITZO, Associate Pro­ fessor of Mathematics. B.S., City College of New York; M.A., M.Phil., Ph.D., Columbia University.

DANIEL D. CHIRAS, Assistant Professor Adjunct of Biology. B.A., Kansas State University; Ph.D., University of Kansas.

KANG RAE CHO, Associate Professor of Management. B.A., Korea University, Seoul; M.B.A., Utah State University; Ph.D., University of Washington.


NANCY G. CHRISTIE, Assistant Professor of Education. B.A., University of Arizona; M.S., University of Arizona.

DENE L. CLARK, Assistant Professor and Social Sciences/Reference Librarian, Auraria Library. B.S., University of Iowa; M.A., University of Minnesota.

JOHN R. CLARK, Chairman for Computer Science and Engineering. Professor of Computer Science. B.S., Stanford University; M.S., Polytechnic Institute of New York; Ph.D., Massachusetts Institute of Technology.

THOMAS A. CLARK, Associate Professor of Urban and Regional Planning. A.B., Brown University; M.A., Ph.D., University of Iowa.

WILLIAM F. CLARK, Senior Instructor in Music. B.M.E., University of Colorado; M.M., Northwestern University.

MARK A. CLARKE, Associate Professor of Education. B.A., University of Colorado; M.A., American University in Cairo (Egypt); Ph.D., University of Michigan.

WILLIAM H. CLOHESSEY, Professor of Mechanical Engineering. B.S., Queens College; M.A., Cornell University.

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