ACADEMIC CATALOG

2003-2005

University of North Dakota
Grand Forks, North Dakota

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SUGGESTIONS AND COMPLAINTS
The University welcomes suggestions and/or complaints from students, faculty, and staff, which should be directed to the unit or personnel most directly involved. It is only in this way that the institution can become aware of potential problems and take appropriate action. The University may review with accrediting agencies a log of anonymously tracked written student complaints.

ACCESS TO RECORDS (FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT)
In compliance with the Family Educational Rights and Privacy Act of 1974 as amended, the University of North Dakota has developed policy guidelines for access to the education record with respect to the rights of eligible students and parents of dependent eligible students. All information contained in University records is considered confidential, except for directory information, which may be released publicly in printed, electronic, or other form. Directory information is defined in the Code of Student Life in “Section 8-2: Student Records/Directory Information.” Students may restrict the release of directory information no later than the tenth class day of the semester, in person, at the Office of the Registrar, Room 203, Twamley Hall.

THIS CATALOG was published by the University of North Dakota Office of the Registrar, Nancy Krogh, Registrar, and the UND Graduate School, Joseph N. Benoit, Dean. Printing by Kaye’s Printing of Fargo, N.D.

UND is a series of bulletins published seven times a year in March, April, July, August, September, October, and December by the University of North Dakota, Room 411, Twamley Hall, Centennial Drive, Grand Forks, North Dakota 58202. Second class postage paid at Grand Forks, North Dakota. POSTMASTER: Send address changes to “UND,” Enrollment Services Office, Box 8135, Grand Forks, ND 58202-8135.

Vol. 95, Issue 3, July, 2003; USPS 476-010
Welcome to the University of North Dakota!

This catalog is really a roadmap; it describes more than 150 possible pathways to a bright future. Because of the need to compress a lot of information in a small space, most of the catalog describes degree programs, courses, and the names of faculty and their qualifications. The narrative doesn’t begin to convey the dynamic nature of the learning environment at the University of North Dakota and the rich opportunities students have to work with highly qualified faculty in the active pursuit of learning.

This volume also outlines the basic framework of university policies and procedures and the structure of the curriculum. The catalog begins with general information about the student body — the kinds of students with whom you will learn and grow; to give you some important context, it goes on to describe the mission, scope, and history of one of America’s great universities. This catalog also contains important information about a host of special services designed to ensure student success in learning.

Be assured that the University of North Dakota is organized first and foremost to prepare its graduates for a lifetime of success, regardless of how the world changes — for it surely will. Welcome to the learning community of the University of North Dakota, and to the next important stage in your personal development as a life-long learner.

Sincerely,

Charles E. Kupchella
President
# Academic Calendar *(Subject to Change)*

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<tr>
<th>Fall Semester</th>
<th>2003-2004 (041)</th>
<th>2004-2005 (051)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning of instruction</td>
<td>August 26</td>
<td>August 24</td>
</tr>
<tr>
<td>Last day for advancement to candidacy for all graduate students planning to graduate in December</td>
<td></td>
<td>August 26</td>
</tr>
<tr>
<td>Holiday, Labor Day</td>
<td>September 1</td>
<td>September 6</td>
</tr>
<tr>
<td>Last day to add a full-term course</td>
<td>September 9</td>
<td>September 7</td>
</tr>
<tr>
<td>Last day on which candidate may apply for a degree</td>
<td>September 23</td>
<td>September 21</td>
</tr>
<tr>
<td>Last day for undergraduate students to submit incomplete work to instructor</td>
<td>September 23</td>
<td>September 21</td>
</tr>
<tr>
<td>Last day for instructor to submit removals of incomplete to the Office of the Registrar</td>
<td>September 30</td>
<td>September 28</td>
</tr>
<tr>
<td>Last day to drop a full-term course</td>
<td>November 7</td>
<td>November 5</td>
</tr>
<tr>
<td>Last day to change to/from S/U and to/from audit</td>
<td>November 7</td>
<td>November 5</td>
</tr>
<tr>
<td>Holiday, Veterans Day</td>
<td>November 11</td>
<td>November 11</td>
</tr>
<tr>
<td>Last day to file preliminary approval of thesis or dissertation and independent study completion in the Graduate School</td>
<td>November 20</td>
<td>November 18</td>
</tr>
<tr>
<td>Thanksgiving recess</td>
<td>November 27-28</td>
<td>November 25-26</td>
</tr>
<tr>
<td>Last day to submit final copy of thesis or dissertation to the Graduate School</td>
<td>December 4</td>
<td>December 2</td>
</tr>
<tr>
<td>Last day to file final report on degree examinations and independent study completion in the Graduate School</td>
<td>December 11</td>
<td>December 9</td>
</tr>
<tr>
<td>Reading and Review Day</td>
<td>December 12</td>
<td>December 10</td>
</tr>
<tr>
<td>Semester examination period</td>
<td>December 15-19</td>
<td>December 13-17</td>
</tr>
<tr>
<td>Winter Commencement and Official Graduation Day</td>
<td>December 19</td>
<td>December 17</td>
</tr>
<tr>
<td>Grades due at noon</td>
<td>December 23</td>
<td>December 21</td>
</tr>
</tbody>
</table>

**Spring Semester**  
2003-2004 (043)  
2004-2005 (053)

<table>
<thead>
<tr>
<th>Spring Semester</th>
<th>2003-2004 (043)</th>
<th>2004-2005 (053)</th>
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</thead>
<tbody>
<tr>
<td>Beginning of instruction</td>
<td>January 13</td>
<td>January 11</td>
</tr>
<tr>
<td>Last day for advancement to candidacy for all graduate students planning to graduate in May</td>
<td></td>
<td>January 11</td>
</tr>
<tr>
<td>Holiday, Martin Luther King Jr. Day</td>
<td>January 19</td>
<td>January 17</td>
</tr>
<tr>
<td>Last day to add a full-term course</td>
<td>January 27</td>
<td>January 25</td>
</tr>
<tr>
<td>Last day on which candidates may apply for a degree</td>
<td>February 10</td>
<td>February 8</td>
</tr>
<tr>
<td>Last day to submit final report on degree examinations and independent study completion in the Graduate School</td>
<td>December 11</td>
<td>December 9</td>
</tr>
<tr>
<td>Reading and Review Day</td>
<td>December 12</td>
<td>December 10</td>
</tr>
<tr>
<td>Semester examination period</td>
<td>December 15-19</td>
<td>December 13-17</td>
</tr>
<tr>
<td>Winter Commencement and Official Graduation Day</td>
<td>December 19</td>
<td>December 17</td>
</tr>
<tr>
<td>Last day to file preliminary approval of thesis or dissertation in the Graduate School</td>
<td>April 15</td>
<td>April 14</td>
</tr>
<tr>
<td>Last day to submit final copy of thesis or dissertation to the Graduate School</td>
<td>April 29</td>
<td>April 28</td>
</tr>
<tr>
<td>Last day to file final report on degree examinations and independent study completion in the Graduate School</td>
<td>May 6</td>
<td>May 5</td>
</tr>
<tr>
<td>Reading and Review Day</td>
<td>May 7</td>
<td>May 6</td>
</tr>
<tr>
<td>Semester examination period</td>
<td>May 10-14</td>
<td>May 9-13</td>
</tr>
<tr>
<td>Spring Commencement and Official Graduation Day</td>
<td>May 15</td>
<td>May 14</td>
</tr>
<tr>
<td>Grades due at noon</td>
<td>May 18</td>
<td>May 17</td>
</tr>
<tr>
<td>Last day to file preliminary approval of thesis or dissertation in the Graduate School</td>
<td>April 9-12</td>
<td>March 25-28</td>
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<tr>
<td>Last day to submit final copy of thesis or dissertation to the Graduate School</td>
<td>April 29</td>
<td>April 28</td>
</tr>
<tr>
<td>Last day to file final report on degree examinations and independent study completion in the Graduate School</td>
<td>May 6</td>
<td>May 5</td>
</tr>
<tr>
<td>Reading and Review Day</td>
<td>May 7</td>
<td>May 6</td>
</tr>
<tr>
<td>Semester examination period</td>
<td>May 10-14</td>
<td>May 9-13</td>
</tr>
<tr>
<td>Spring Commencement and Official Graduation Day</td>
<td>May 15</td>
<td>May 14</td>
</tr>
<tr>
<td>Grades due at noon</td>
<td>May 18</td>
<td>May 17</td>
</tr>
</tbody>
</table>

**Summer Session**  
2003-2004 (044)  
2004-2005 (054)

<table>
<thead>
<tr>
<th>Summer Session</th>
<th>2003-2004 (044)</th>
<th>2004-2005 (054)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning of instruction</td>
<td>May 17</td>
<td>May 16</td>
</tr>
<tr>
<td>Last day for advancement to candidacy for all graduate students</td>
<td>May 25</td>
<td>May 24</td>
</tr>
<tr>
<td>Last day to add a full-term course</td>
<td>May 25</td>
<td>May 24</td>
</tr>
<tr>
<td>Holiday, Memorial Day</td>
<td>May 31</td>
<td>May 30</td>
</tr>
<tr>
<td>Last day on which candidates may apply for a degree</td>
<td>June 15</td>
<td>June 14</td>
</tr>
<tr>
<td>Holiday, Independence Day</td>
<td>July 5</td>
<td>July 4</td>
</tr>
<tr>
<td>Last day to file preliminary approval of thesis or dissertation in the Graduate School</td>
<td>July 1</td>
<td>June 30</td>
</tr>
<tr>
<td>Last day to drop</td>
<td>July 9</td>
<td>July 9</td>
</tr>
<tr>
<td>Last day to change to/from S/U</td>
<td>July 9</td>
<td>July 9</td>
</tr>
<tr>
<td>Last day to submit final copy of thesis or dissertation to the Graduate School</td>
<td>July 15</td>
<td>July 14</td>
</tr>
<tr>
<td>Last day to file final report on degree examinations and independent study completion in the Graduate School</td>
<td>July 15</td>
<td>July 14</td>
</tr>
<tr>
<td>Final examination period</td>
<td>August 6</td>
<td>August 5</td>
</tr>
<tr>
<td>Summer Commencement and Official Graduation Day</td>
<td>August 6</td>
<td>August 5</td>
</tr>
<tr>
<td>Grades due at noon</td>
<td>August 10</td>
<td>August 9</td>
</tr>
</tbody>
</table>

**All academic deadline dates apply to full-term, on-campus courses.**
Satisfactory Progress

Any time you drop a course or withdraw from the University, you may be jeopardizing your federally funded student financial aid, now or in the future. You must successfully complete at least two-thirds of all the courses in which you enroll. Dropping after the first day of class may not affect your academic standing, but it may affect your ability to receive financial aid. Please review this policy and others pertaining to your financial aid in the Code of Student Life in the appendix section titled “A Summary of the Standards of Satisfactory Progress for Financial Aid Eligibility,” or contact the Student Financial Aid Office.

Policy on Equal Opportunity

It is the policy of the University of North Dakota that there shall be no discrimination against persons because of race, religion, age, color, sex, disability, sexual orientation, national origin, marital status, veterans’ status, or political belief or affiliation, and that equal opportunity and access to facilities shall be available to all. This policy is particularly applicable in the admission of students in all colleges and in their academic pursuits. It also is applicable in University-owned or University-approved housing, food services, extracurricular activities and all other student services. It is the guiding policy in the employment of students either by the University or by non-University employers through the University and in the employment of faculty and staff. Inquiries as to the equal opportunity, affirmative action, or diversity policies for the University of North Dakota or coverage of state and federal civil or human rights statutes or regulations may be directed to Sally J. Page, Affirmative Action Officer, 101 Twaney Hall, P.O. Box 7097, University of North Dakota, Grand Forks, ND 58202-7097; telephone (701) 777-4171 (voice/TDD) e-mail, Affirmative_Action@mail.und.nodak.edu. Policies and procedures are at: http://www.und.nodak.edu/dept/aao. Concerns regarding Title VI of the Civil Rights Act, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, or the Americans With Disabilities Act may be addressed to the Affirmative Action Officer or the Office of Civil Rights, U.S. Department of Education, 8930 Ward Parkway, Second Floor, Kansas City, MO 64114.

Harassment

The University of North Dakota does not tolerate harassment. If you feel that you have been harassed, please report the incident to one of the following: If you are a student, contact the Dean of Students Office. If you are a graduate student and the harassment deals with academic issues, graduate assistantships, awards, and scholarships, contact the Graduate School. If you have a medical condition or disability, contact the Dean of Students Office. If you are a staff member, contact Human Resources. For more information, contact the Dean of Students Office, 180 McCannel Hall.

Accessibility

The University of North Dakota provides services to students with disabilities. If you are a student, contact the Accessibility Services Office. If you are a staff member, contact the Human Resources Office. Information is available at the Office of the Vice President for Student Life and Academic Affairs, 101 Twaney Hall, P.O. Box 7097, University of North Dakota, Grand Forks, ND 58202-7097; telephone (701) 777-3425 (voice/TDD) e-mail, Accessibility.Services@mail.und.nodak.edu. For more information, contact the Office of Disability Services, 101 Twaney Hall, P.O. Box 7097, University of North Dakota, Grand Forks, ND 58202-7097; telephone (701) 777-3425 (voice/TDD) e-mail, Accessibility.Services@mail.und.nodak.edu.

Disability Access on Campus

To request a disability accommodation in the classroom: Disability Support Services, 777-3425 (voice/TDD). Accessible classroom - contact the professor.

Meadows/Mumps/Rubella Immunization

Students enrolled in a course offered for credit at any institution must provide documentation of immunity against measles, mumps and rubella in accordance with North Dakota University System policy. Students enrolled only in distance learning or other courses taught off campus, students enrolled only in continuing education or non-credit courses, and students attending camps and workshops are exempt from this policy. Documentation of immunity means: (a) evidence of two doses of measles, mumps, and rubella (MMR) vaccine at least one month apart from a licensed physician or authorized representative of a state or local health department, (b) proof of a negative serologic test for measles, mumps, and rubella, or (c) proof of date of birth prior to 1957. Students will be allowed one semester to provide this information to the Student Health Service, McCannel Hall, telephone (701) 777-4500, and if it is not provided by then, further registration may not be allowed until proof of such immunization is provided.

Exceptions to this policy may be granted by Student Health Service only when: (a) immunization is contraindicated by illness, pregnancy, certain allergies, or other medical conditions certified by a licensed physician, (b) the student has had one immunization and agrees to have a second one no less than one month later, or (c) the student’s bona fide religious beliefs preclude participation in an immunization program.

Security Compliance

The University of North Dakota is in compliance with the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act (Clery Act) formerly known as the Crime Awareness and Campus Security Act of 1990. For more information, contact the UND Police Department at (701) 777-3491, visit the UND Police Department web page at: http://www.police.und.edu, or e-mail: und_police@operations.und.edu

Access in campus housing - Housing Office, 777-4251
Accessible campus bus service - Transportation Office, 777-4030
Accessible state fleet vehicle - Transportation Office, 777-4122
Accessible parking permits - Traffic Division, 777-3551
An accommodation for a student employee - job supervisor
To report an access concern, contact the person or department to whom the initial request for accommodation was directed, or call the ADA line at 777-2591 or 777-2796 (TTY/TDD). Callers have the option of leaving their name and contact information if they wish to know the outcome.

Code of Student Life

The University of North Dakota Code of Student Life is a publication issued each year to all students. The Code outlines the rights and responsibilities enjoyed by the students, faculty, and staff who make up the University community. The purpose of the information contained in the Code of Student Life is to promote and maintain a learning environment appropriate for an institution of higher education and to serve as a basic guide to help prevent abuse of the rights of others. Members of the University community are expected to be familiar with the rules and regulations contained within the Code and to act in compliance with them at all times. Nothing within the Code is intended to limit or restrict freedom of speech or peaceful assembly. Copies of the Code are available at the Office of the Vice President for Student and Outreach Services, 307 Twaney Hall and at the Dean of Students Office, 180 McCannel Hall.
University Information

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General Information

THE SCOPE OF THE UNIVERSITY

Classified as a “Doctoral/Research University Intensive” by the Carnegie Foundation for the Advancement of Teaching, the University of North Dakota is a coeducational, state-supported institution which recorded an enrollment of 25,423 students in the fall of 2002. UND is located in Grand Forks, a city of 50,000 situated across the Red River from East Grand Forks, Minnesota, about 300 miles northwest of Minneapolis and 150 miles south of Winnipeg.

This university is characterized by a solid foundation of the liberal arts, a manageable size, high-quality students and faculty, a comprehensive curriculum, a widely recognized program of graduate education and research, law and medical schools praised for quality and innovation, rich cultural resources, and an outstanding record of alumni support.

The University’s undergraduate and graduate programs are offered in 170 fields through 10 major units: College of Arts and Sciences (which includes a major division devoted to music, theater and visual art), Odegard School of Aerospace Sciences, College of Business and Public Administration, School of Engineering and Mines, College of Nursing, College of Education and Human Development, School of Law, School of Medicine and Health Sciences, Division of Continuing Education, and Graduate School (offering the doctorate in 20 programs, the specialist’s degree in one program, the master’s degree in 46 programs).

In the fall of 2002, about 54 percent of UND’s students were residents of North Dakota and about 27 percent were from Minnesota, with the remainder representing every other state, Canada and 49 other countries. Some 83 percent were enrolled in UND’s undergraduate programs. The University awarded 2,162 degrees in 2001-2002, including 1,599 undergraduate degrees, 420 master’s degrees, 30 doctoral degrees, 62 law degrees, and 51 M.D. degrees.

Research, scholarship and creative activity make up an important part of life at UND. External grants received by UND in 2001-2002 totaled more than $54.6 million.

The University’s faculty and research staff numbers 610 full-time individuals. Its total full-time workforce of 2,435 makes it the state’s largest employer outside the two U.S. Air Force bases.

UND’s 530-acre campus, regarded as one of the most beautiful in the region, includes 229 buildings and 5.1 million square feet of space. Newer facilities are a Barnes and Noble University/community bookstore and the Ralph Engelstad Arena, home of the University’s NCAA Division I ice hockey program. New to Grand Forks is the Alerus Center, a 22,000-seat events and conference facility. It joins such venues as the Fire Hall Theatre, Empire Arts Center, and North Dakota Museum of Art, as well as UND’s Chester Fritz Auditorium, Burt Ness Theatre, Josephine Campbell Recital Hall, and Hyslop Sports Center, in bringing cultural, entertainment, and athletic programming to the community.

BRIEF HISTORY OF UND

The University of North Dakota at Grand Forks was founded in 1883 by the Dakota Territorial Assembly, six years before North Dakota became a state. The cornerstone for the first building was laid that autumn. Four faculty members met the 11 students who entered the University on opening day, September 8, 1884. The first class was graduated in 1889.

Unlike most state institutions of higher education west of the Mississippi, UND did not begin as an agricultural school or only as a teachers college. Organized initially as a College of Arts and Sciences, with a Normal School for the education of teachers, UND soon evolved into a full-fledged multi-purpose university. Instruction of graduate students (the first master’s degree was awarded in 1895) and the conducting of research were under way and the world of the 19th century. Depressions, drought, wars and financial crises have more than once threatened its future, but the University has been able to withstand these challenges and to prosper as an institution of national caliber.

The University today would be recognizable to its founders. UND was the only institution of higher education in the state to be originally established as a university, with all of the implications of that title. A university has an obligation to preserve knowledge, to disseminate knowledge, and to create new knowledge. The University of North Dakota has served as a capstone for the entire system of public education in the state, and from its earliest year has embraced all levels of higher education—undergraduate, professional and graduate—and maintained an active program of research and service. Through these 12 decades the University has created a tradition in instruction, research, and service which has served as a model for other institutions. Consistent with the intent of the founding legislators, the University has served as a standard-bearer and leader for higher education in the state.

MISSION OF THE UNIVERSITY

The following mission statement is on file with the State Board of Higher Education:

The University of North Dakota, as a member of the North Dakota University System, serves the state, the country and the world community through teaching, research, creative activities, and service. State-assisted, the University’s work depends also on federal, private, and corporate sources. With other research universities, the University shares a distinctive responsibility for the discovery, development, preservation and dissemination of knowledge. Through its sponsorship and encouragement of basic and applied research, scholarship, and creative endeavor, the University contributes to the public well-being.

The University maintains its legislatively enacted missions in liberal arts, business, education, law, medicine, engineering and mines; and has also developed special missions in nursing, fine arts, aerospace, energy, human resources and international studies. It provides a wide range of challenging academic programs for undergraduate, professional, and graduate students through the doctoral level. The University encourages students to make informed choices, to communicate effectively, to be intellectually curious and creative, to commit themselves to lifelong learning and the service of others, and to share responsibility both for their own communities and for the world. The University promotes cultural diversity among its students, staff, and faculty.

In addition to its on-campus instructional and research programs, the University of North Dakota separately and cooperatively provides extensive continuing education and public service programs for all areas of the state and region.
ACCREDITATION

The University of North Dakota has been accredited by the North Central Association of Colleges and Schools since the Association was organized in 1913. UND received its most recent NCA accreditation in 1994. Most individual colleges, schools, and departments are members of accrediting associations in their respective fields. The address and telephone number of the North Central Association are: Commission on Institutions of Higher Education, 30 N. LaSalle St., Suite 2400; Chicago, IL 60602-2504; telephone numbers are (800) 621-7440 or (312) 263-0456; fax number is (312) 263-7462; web site address is http://www.ncahigherlearningcommission.org/; e-mail address is info@ncacrhe.org.

THE ACADEMIC YEAR

The academic year is divided into two semesters, each approximately 16 weeks in length: the first, beginning near the end of August and ending prior to Christmas; the second, beginning in mid-January and extending to mid-May. A Summer Session begins in May and concludes in August. The UND Summer Session offers the variety of three-week, eight-week, and twelve-week courses and choices of credit and non-credit workshops, institutes, and special programs of various lengths. See the academic calendar at the font of the catalog.

PROGRAMS OF STUDY

The University of North Dakota’s academic programs are described elsewhere in this catalog. Please see the listings of the colleges and schools and listings of the undergraduate and graduate departments and program areas. See also the index at the back of the catalog.

VISITOR INFORMATION

Visitors always are welcome at the University of North Dakota.

Office hours: 8 a.m. to 4:30 p.m., Monday through Friday, although some buildings such as the Chester Fritz Library and the UND Memorial Union are open for extended hours, including weekends.

Visitor Information: Stop at the Info-Center desk in the UND Memorial Union, the main desk in Wilkerson Hall, the J. Lloyd Stone Alumni Center, or the Chester Fritz Auditorium.

Telephone Numbers: The area code for Grand Forks is 701. Call 777-2011 for administrative or academic office numbers; call 777-3565 for residence hall or family housing numbers. 1-800-CALL UND

Event Information: Call the Info-Center at 777-4321, watch UND Television Channel 3, or stop at the Visitor Information locations listed above, consult UND’s on-line calendar on the worldwide web: www.und.edu/calendar, or write or call the Office of University Relations, 777-2731.

Tickets: Athletic tickets available at Hyslop Sports Center (fieldhouse) Ticket Office, hours 8:30 a.m. to 4 p.m., Monday-Friday (telephone 777-4689) or at the Ralph Engelstad Arena box office, hours 8:30 a.m. to 4:30 p.m. (telephone 777-2236). Tickets for all athletic events can also be purchased by using Ticketmaster, telephone 772-5151, or at any Ticketmaster outlet; Business Theatre (site of Theatre & Dance Department and first floor) Box Office open approximately two weeks prior to each production, 2 to 5 p.m., Monday through Friday (telephone 777-2587 for tickets; 777-3446 for information); Chester Fritz Auditorium Box Office open from 9 a.m. to 4:30 p.m., Monday through Friday (telephone 777-4900 for information; 772-5151 to purchase tickets or visit any Ticket Master outlet.). Alerus Center Box Office is open 10 a.m.-4 p.m., Monday-Friday, 792-1420.

Prospective Student Tours: Arrange by writing or calling the Office of Enrollment Services, telephone 777-4463 or 1-800-CALL UND (ext. 4463). (also see section titled Tours of Campus).

Campus Police and Emergency Services: Call 777-3491 for UND’s 24-hour a day police desk. For all emergencies, dial 911 from both on and off campus phones. The University Police Department provides statistical information upon request in accordance with the Clery Act.

Dining Facilities: Parents are welcome to dine in the three dining centers with their student (guest meal prices available or students may use their Passport Dollars account or bonus meals for family guests). Residence Hall dining centers are in Wilkerson, Squires, and the Memorial Union (Terrace). The Twamley Snack Bar offers some breakfast fare, full noon lunches, and convenience store food items. It is open from 8:30 a.m. to 3:00 p.m. Convenience store service is also available at Wilkerson Convenience Store in Wilkerson Hall, 4 to 11 p.m., Monday-Sunday, and at the Walsh Convenience Store, main level of Walsh, 7 a.m. to 7 p.m., Monday-Friday. Fast food service is available at the Memorial Union Food Court, 7 a.m. to 11 p.m. (Summer/holiday hours may vary), with franchised operations such as Subway, TCBY, Juice Works, and Little Caesars Pizza menu selections available. Other eating facilities include Subway, Johnstone-Fulton Hall, 11 a.m. to midnight, seven days a week, Wings (Airport) Cafe, UND Administrative Aerospace Center, Airport, 7:30 a.m. to 2:30 p.m., Monday through Friday, providing subs, sandwiches, hot meal entrees, various other offerings. The Medical School Food Cart in the Medical School lower level offers breakfast and lunch choices, including sandwiches and beverages, 7:30 a.m. to 1:30 p.m., Monday through Friday, The North Dakota Museum of Art Cafe, on the lower level of the Museum building, serves cappuccino, espresso, and pastries, 9:30 a.m. to 4:30 p.m., Monday through Friday, and lunch is served 11:30 a.m. to 2 p.m. Tabula Coffee House, 3012 University Avenue, is open 7 a.m. to 11 p.m. Monday through Friday; 8 a.m. to 11 p.m. Saturdays, and noon to 11 p.m. Sundays.

Parking: Visitors are always welcome on campus. You are encouraged to stop by the Union Station (traffic and parking administrative office) in the lower level of the Memorial Union to obtain a free visitor’s permit. The only parking restrictions that apply to visitors are metered and time zones, reserved parking in University Residence Halls or Apartments, Service Vehicle areas, towable offenses, and handicap violations. Any other infraction will be waived for visitors. Simply complete the visitor section on the ticket and return it to the Union Station within seven calendar days. For further information, call 701-777-3551.

Books and Memorabilia: The University Bookstore, operated by Barnes and Noble, is located on the Bronson Property north of the main campus (725 Hamline Street).

Golf: The Ray Richards Golf Course, south of the main campus, is open to the public.

J. Lloyd Stone Alumni Center: This restored turn-of-the-century mansion is open for tours; today it serves as headquarters for the UND Alumni Association and Foundation, telephone (701) 777-2811, 1-800-543-8764 out-of-state.

Athletic Hall of Fame: The colorful and accomplished past of UND sports will be recalled by a visit to the UND Athletic Hall of Fame, where plaques and descriptions recognizing the more than 200 former Sioux athletes are included. It is located in the Ralph Engelstad Arena on the south end of the upper concourse.

North Dakota Entrepreneur Hall of Fame: North Dakota entrepreneurs and innovators are recognized for their long-standing entrepreneurial contributions to the state and nation. Located on the second level of the Alerus Center in the Rural Technology Center on the west end of campus, the Entrepreneur Hall of Fame includes about 40 inductees.
TOURS OF CAMPUS FOR PROSPECTIVE STUDENTS

The school you attend can be one of the most important investments in your life, so you will want to learn as much as possible about the colleges and universities you are considering. Brochures and catalogs can tell you much, but a visit to the campus can go beyond that in providing the mood and the atmosphere of an institution and its people. A campus visit gives you the opportunity to experience the total environment, including the host community. After all, you will not be spending all your time in the classroom.

During a visit you can meet with campus personnel in a variety of situations. You can talk to an Enrollment Services representative, faculty members, and to students. You can also eat in campus dining facilities. When you set up an appointment for a visit to UND, we can assist you with arrangements for your overnight stay. Tell us when you want to come and we will work out the details. We will send you a special brochure about visiting the University to help answer questions about what to do when you come to campus. If special accommodations are needed, let us know in advance. It is best if you give us a week’s notice for a visit, but feel free to stop in or call at any time. The easiest way to set up a visit is to call 1-800-CALL UND and ask for the Office of Enrollment Services, call (701) 777-4463, or write to Office of Enrollment Services, Box 8135, Grand Forks, ND 58202. You can also find us on the web at: http://www.go.und.edu.

PARKING REGULATIONS

All parking on campus is permit parking only. Students who drive a vehicle on campus must purchase a parking permit upon arrival. Permits can be purchased at the Traffic Division — Union Station (lower level of Memorial Union). It is the responsibility of the individual to properly display the permit and comply with University Motor Vehicle Regulations at all times.

If you are a VISITOR ON CAMPUS, please see the Visitors Information Section about visitor parking permits.

STUDENT RECORDS

The student records maintained by the University fall into two general categories—public directory information and educational records. As the custodian of student records and in compliance with the Family Educational Rights and Privacy Act of 1974 as amended, the University assumes the trust and obligation to ensure the full protection of these student records. The University practices the policy of maintaining the confidentiality of educational records. It also guarantees that all records pertaining to a student (with the exception of those specifically exempted in the Code of Student Life) will be produced, with reasonable notice, for inspection by that individual student. The administrative procedures on student records as outlined in the Code of Student Life are adhered to by University personnel who have or accumulate educational records which are in a personally identifiable form.

Public Directory Information

Directory information, which may be released publicly in printed, electronic, or other form, is defined to include the following: the student’s name, home address, local address, telephone listing, email address, date and place of birth, major field of study, class level, participation in officially recognized activities, weight and height of members of athletic teams, dates of enrollment, degrees and awards received, and the most recent educational institution attended by the student.

The student may request that directory information not be made public by completing an appropriate form in the Office of the Registrar no earlier than the first day of class and no later than the 10th day of class in a semester (or fifth class day in the eight week summer session). This request will remain in effect for one academic year. In the event of such a request, these data will be treated as educational records information.

Educational Records

Educational records are those documents, records, files, and other materials which contain information directly related to a student and are maintained by the University of North Dakota or a person acting on behalf of the University. Educational records include more than academic records. Educational records, with the exception of those designated as public directory information, may not be released without written consent of the student to any individual, agency or organization other than authorized personnel. Directory Information may be released publicly in printed, electronic, or other form. See the Code of Student Life, section 8, for details on the various ramifications of the Family Educational Rights and Privacy Act (FERPA), its implementing federal regulations, and UND policies. Students have a right to file a complaint regarding a violation of FERPA with the Affirmative Action Office, 101 Twamley Hall, P.O. Box 7097, Grand Forks, ND 58202-7097, or with the Family Policy and Regulations Office, U.S. Department of Education, Washington, DC 20202.

RESEARCH

Research is a critical component of the mission of the University of North Dakota. As a result of research activities conducted by the faculty, UND undergraduate and graduate students have expanded opportunities to broaden and enrich their educational experience. In addition to contributing to the educational mission of the University, the results of the research are often of direct benefit to the residents of the state and to the nation as a whole.

Research activities are conducted through University research programs and individual faculty members working within their own departments. Several of the UND research programs are involved in public service activities which provide an opportunity for faculty and students to conduct research projects directly benefiting the public.

Financial support for research activities is provided either from University sources, such as the University Senate Scholarly Activities Committee; the Faculty Research Seed Money Program and the Office of Research and Program Development, or through funds provided from external agencies such as Federal or State government, private foundations, and industry. In fiscal year 2002, $54.7 million of external support was received for sponsored program activities, of which $37.7 million was for research.

Major UND research programs include:

Anthropology Research: Anthropology Research is the research division of the Department of Anthropology at the University of North Dakota. They provide a variety of archeological and cultural resources management services to federal, state, and private organizations. Thier primary research focuses on archeological investigation of the prehistoric cultures and peoples that occupied the Northern Great Plains. Geographically, most of their work takes place in the Dakotas and Wyoming. They have various full time faculty and staff that provide a number of in-house specialties, and they also consult with other organizations who provide additional research capabilities.
Center of Excellence in Neurosciences: The goal of the Center of Excellence in Neurosciences is to help talented investigators develop expertise in multidisciplinary approaches toward the understanding of brain function in health and disease, including Parkinson’s disease and Multiple Sclerosis which have high incidences in the State of North Dakota.

Center for Rural Health: The Center for Rural Health serves as a focal point for rural health in North Dakota. As the federally designated State Office of Rural Health for the state, the Center connects the School of Medicine and Health Sciences and the university to rural communities and their health institutions to facilitate developing and maintaining rural health delivery systems. In this capacity the Center works both at a national level and at state and community levels.

Energy and Environmental Research Center: Established as a federal research and development facility in 1951, the EERC has been a part of the University of North Dakota (UND) since 1983. With a staff of more than 210 talented scientists, engineers, and support staff, the EERC is one of the leading developers of energy and environmental technologies in the world. The philosophy of the Energy & Environmental Research Center (EERC) is to improve global quality of life by providing leadership in visionary multidisciplinary research and development leading to demonstration and commercialization of innovative, clean, efficient energy technologies and of environmental technologies addressing the protection of air, water, and soil.

The EERC is recognized internationally as an expert in scientifically-advanced energy systems and the prevention and cleanup of air, water, and soil pollution.

North Dakota Biomedical Research Infrastructure Network (BRIN): North Dakota BRIN’s purpose is to build biomedical research capacity within the state. Networking and human resource development are the watchwords for this collaborative effort between the two North Dakota research universities, four baccalaureate institutions in the North Dakota University System and five tribal community colleges. The Center is a research oriented program involving basic science and clinical departments. All faculty are involved in research and the graduate students are in training to become independent investigators. A major feature of the Center is the extensive collaborative interactions among its faculty. Faculty and students have numerous collaborative interactions that enable them and their colleagues to pursue common research goals, often at the interface between traditional areas of research.

Regional Weather Information Center: The mission of the Regional Weather Information Center is to support the highest quality undergraduate and graduate education through experimental opportunities in operational and applied research in contemporary meteorology with an emphasis on future applications through technology transfer to enhance economic development. The 2,000 sq. ft. facility is located on the second floor of Odegard Hall. The facility contains a prototype information management center designed to support weather analysis and forecasting in a responsive decision support environment and support the research and operational activities of the Center. Additionally, unique support is derived from UND’s Doppler weather radar, a high speed data link to the UND’s Cray supercomputer, and real time access to a statewide network of automated weather observing stations. The center also houses a specially designed soundproof radio room and separate television studio. A unique feature of the introduction set allows editing within the facility resulting in high performance weather graphics producing three dimensional animations of broadcast weather information.

Upper Mid-West Aerospace Consortium: UMAC develops products and services for Agriculture, for Natural Resource Management, and for K-12 Education, using satellite imagery and other spatial technologies. UMAC also provides information and educational outreach services to the general public with respect to regional impacts of environmental and climatic change by operating as a Public Access Resource Center, or PARC, focused principally on the agriculture, natural resource management, and education communities. As a consortium, UMAC is led by the University of North Dakota, and includes participants from academia, industry, and government located throughout North Dakota, South Dakota, Montana, Wyoming, and Idaho.

LEARNING COMMUNITIES AT UND

There are now three programs at UND that purposefully offer students the opportunity to participate in academic programs while developing lasting relationships with a small group of students and faculty. These programs afford students a relatively small “community” for pursuing their academic studies, although each community varies in its structure and methods.

The Integrated Studies Program is one of these learning communities. Work and study are organized around a central theme and carried out in a variety of small group settings in which discussion among students and the integration of knowledge are emphasized. The context for each semester’s study is a cluster of 3-5 general education courses. Consult the index to find a full description of this learning community. For more information, call the Integrated Studies Program at (701) 777-3622.

The Learning Community at Johnstone-Fulton-Smith (TLC@JFS) offers first-year students living in the Johnstone-Fulton-Smith residence hall complex the opportunity to take courses and to study with their neighbors. Students register for a partially common cluster of general education courses and a section of Introduction to University Life which meets in the residence hall complex. A writing consultant, also located in the residence complex, is an added feature for students in this program. Both this program and the Integrated Studies Program include an outdoor experience. More information about this program may be found by calling Student Academic Services (701) 777-2117.

The Honors Program is a learning community designed for students with an interest in intellectual and creative pursuits. Students participate in an Honors class or two per semester as part of their program of study throughout their undergraduate education. Other educational, social, and service activities extend their learning beyond the classroom experience. Students in any college of the University may apply for admission to this learning community. For more information, call (701) 777-2219.

THE HONORS PROGRAM
http://www.und.edu/dept/honors/
I. General

The Honors Program serves motivated, accomplished students by nurturing creativity, critical thinking, and scholarship beyond the usual academic frameworks. Through classes, co-curricular activities, service projects, and advisement, the Honors Program creates a learning community that emphasizes intellectual exploration. Students may participate in the Honors Program throughout their undergraduate career. High school graduates are encouraged to apply at the time of their initial registration in the University. Students may also enter the Program after the first year, and inquiries from interested students are welcome. Please phone (701) 777-2219 or email: honors@sage.und.nodak.edu. Students in any college of the University may enroll in the Honors Program.

II. Administration

The Program is administered by a Coordinator and a University Honors Committee. The Honors Program has its own administrative apparatus and can adjust academic programs to fit the needs and goals of individual students. In response to this flexibility, Honors Program students are expected to demonstrate intellectual excellence
in their own lines of interest and to pursue learning independently. Opportunities to do so are offered in Honors colloquia, Honors tutorials, other special classes, Honors sections of regular courses, and regular courses taken in Honors mode. Most students graduate from the Program as "Scholars in the Honors Program" while also fulfilling a major in the Colleges, but the Honors Program also offers the option of creating an individually designed program of study through Honors. This option may result in either a B.A. or a B.S. degree earned through the College of Arts and Sciences.

III. Means

For beginning students in the Program, special introductory courses are available to familiarize students with the nature of the Program and to acquaint the Honors faculty with the students. Advanced courses and colloquia introduce students to the full range of the disciplines which make up the University.

The requirements to graduate as a Scholar in the Honors Program are: (a) a minimum of 24 credits in Honors work including 8 credits of colloquia; (b) a sophomore Honors portfolio; and (c) a senior thesis and oral presentation (with a grade no lower than “B”) in some field of specialization. After successful completion of 9 Honors credit hours and submission of the Sophomore Honors Portfolio, the student will be considered for full membership in the Honors Program. For students who graduate through the Honors Program, these requirements substitute for the University General Education Requirements. To graduate without a major in the Colleges, students are additionally required to develop, in conjunction with an Honors advisor, an academic program based around individual needs. This program of study must be approved by the Honors Program. The colloquia mentioned above are topical and, usually, interdisciplinary discussion courses, one semester in length, on topics chosen according to student and faculty interests. The Honors mode entails an extra credit of work in a regular course so a greater than usual depth and/or breadth of knowledge can be achieved in that course.

In addition, Honors Program students are expected to maintain a solid academic performance. The present criterion is that a student should attain a 3.2 average by the sophomore year and maintain it. If this does not occur, the Honors Committee reviews the standing of the student.

IV. Advantages

Students in the Honors Program have many opportunities to develop their own ideas and their writing and research skills; they also benefit from close association with faculty and other students who share their intellectual interests. Honors Program courses encourage students to think independently, creatively, and critically; to express their thoughts clearly, orally and in writing; to expand their perspectives on the world; to develop as citizens; to understand the nature of scholarly inquiry; and to forge connections among disciplines. Successful completion of the Program is a clear signal to prospective employees and graduate schools that the graduate is a serious, well-prepared, accomplished student.

THE SENIOR HONORS SYSTEM

http://www.und.edu/dept/honors/

In the Senior Honors System (formerly known as Departmental Honors), students of marked ability may pursue, in their senior year, a voluntary program of supervised independent study, leading to the bachelor’s degree with honors in the major field of study. The purpose of this program is twofold: first, to give public recognition to the superior student; and second, to enable the student to broaden, deepen, and enrich the educational experience.

In order to be eligible, a student must have completed 75 hours of work by the end of the first semester of the junior year with a general grade point average of at least 3.2. Students must apply for admission to honors work by April 1 of their junior year. If he or she is certified by the chairperson of his or her major department, Academic Dean, and the Honors Committee, the student and his or her supervisor will then plan a course of independent study for the following year.

The credits in independent study shall total nine credits. At the discretion of the department and of the Honors Committee these credits may be either in addition to major requirements or in place of some requirements. Such a study may consist of honors courses, tutorial readings, projects of research, seminars, creative work, a thesis, or any combination of these which the department and the Committee may approve. This study, whatever its nature may be, will appear on the student’s record with the number 489 and the title "Senior Honors." The study may be either departmental or interdisciplinary. To qualify for Senior Honors, the student must receive a grade no lower than a “B” for this work. Theses will be bound and deposited in the University Library. The student will be expected to present the nominal charge involved.

The student must maintain a GPA of at least 3.2, make satisfactory progress in his or her course of independent study, and submit a report progress to the supervisor at the end of the first semester of the senior year. At that time, the student, the department, or the Committee may decide to terminate the student’s honors work. At or near the end of the senior year, if the work is continued, the student will participate in the Honors Undergraduate Research Conference or take a comprehensive oral examination at which a member of the Honors Committee shall be present.

An unsuccessful candidate for Senior Honors will receive the bachelor’s degree with the usual General Honors if his or her record meets the grade-point requirements. A successful candidate for Senior (Departmental) Honors will receive the same distinction; the additional notation “with honors in (the major field)” will appear on the Commencement program and transcript.
### Tuition, Fees, Financial Information

#### Tuition and Fees, 2002-2003*

**TUITION AND FEES, 2002-2003**

*(Per semester, 12 or more credits)**

<table>
<thead>
<tr>
<th></th>
<th>Resident</th>
<th>Minnesota States</th>
<th>Non-Resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>$1,831.00</td>
<td>$2,052.00</td>
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<tr>
<td>Graduate</td>
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<td>2,738.00</td>
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<tr>
<td>Law</td>
<td>2,090.00</td>
<td>2,432.00</td>
<td>2,958.00</td>
</tr>
<tr>
<td>Medicine</td>
<td>7,077.00</td>
<td>8,154.00</td>
<td>18,305.00</td>
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<tr>
<td>Physical Therapy</td>
<td>3,461.50</td>
<td>3,461.50</td>
<td>4,653.00</td>
</tr>
</tbody>
</table>

Since the University of North Dakota is supported by legislative appropriations, tuition and fees paid by students constitute only a part of the actual cost of the student’s education. An individual registration is not complete until all tuition/fees are paid. Tuition for North Dakota’s institutions of higher education is determined annually by the State Board of Higher Education. In addition, the Board authorizes the individual institutions to collect certain other mandatory fees, which in 2002-03 totaled $354.00 per semester at UND (and is included in the above table). These include the student fees which support, among other functions, musical organizations, the UND Memorial Union, intercollegiate athletics, the health fee, student activity fees allocated by student government for such purposes as concerts and student publications, $182.50; Student Union bond retirement, $14.50; McCannel Hall renovation, $15.00; the wellness fee, $50.00; the ConnectND Fee, $42.00; and the technology fee, $50.00. The wellness, student activity, and bond retirement fees were approved by votes of the student body.

*All fees are subject to change without notice; contact the Office of Enrollment Services for up-to-date cost estimates. Contiguous states and provinces include South Dakota, Montana, Manitoba and Saskatchewan. Part-time students taking 11 or fewer hours are billed on a per-credit hour basis. Summer session tuition and fees are 75 percent of the semester rate.

**In addition to this tuition fee schedule, program fees are assessed in Engineering, Law, and Nursing and for graduate students as indicated in a following section titled “Other Fees.”

#### Other Fees

- **Application Fee (Undergraduate)** $35.00*  
  Payable by all undergraduate students applying for admission.
- **Application Fee for Graduate Students** $35.00*  
  Payable by all graduate students.
- **Application Fee for Medical Students** $30.00*  
  Payable by all students applying for admission to Medical School.
- **Auditing Fee**  
  Auditing fees will be 50% of the regular, per hour tuition charge for the same course.
- **Aviation Laptop Computer Program Fee**  
  A program fee of $450 per semester (fall and spring) will be charged to all aviation students. A program fee of $335 will be charged for summer session.
- **College of Business and Public Administration**  
  A program fee will be charged to all students in the College of Business and Public Administration. The estimated program fee will be $100 per semester for full-time students ($100 per academic year) and $50 per semester for part-time students ($50 per academic year).
- **Engineering Laboratory Field**  
  **Trip Fee (one semester)** as required*  
  Payable by each student enrolled in Civil 481 and Mechanical 380.
- **Engineering Program Fee**  
  A program fee of $12.50 per credit hour will be charged to both undergraduate and graduate students in engineering who have completed 60 semester credit hours on their UND transcript.
  A program fee of $25.00 a semester will be assessed to Undergraduate Students in Engineering with less than 60 accumulated credits.
- **Graduate Student Continuing**  
  **Enrollment Fee** $30.00 per semester*  
  $15.00 per summer*
  Payable by each student registering for 996 (Continuing Enrollment).
- **Graduate Student Thesis Fee** $20.00*  
  Charged for binding and microfilming the original copy of a thesis.
- **Graduate Student Dissertation Fee** $75.00*  
  Charged for binding and microfilming a dissertation and publishing the abstracts in Dissertations Abstracts.
- **Graduate Student Copyright Fee** $45.00*  
  Charged for securing copyright to a dissertation.
- **Late Payment Penalty** $25.00**  
  A late payment penalty will be assessed all students who do not pay their tuition/fees or receive a deferment from the Business Office by the payment deadline. Deadline dates are listed in the semester time schedule of classes.
- **Law Program Fee**  
  A program fee of $500 per semester ($1000 per academic year) will be charged to all law students.
- **Nursing Program Fees**  
  For all students newly admitted to Nursing, a program fee of $150 per semester ($300 per academic year) will be charged all undergraduate students enrolled in the professional nursing education programs that lead to a Bachelor of Science Degree and eligibility for licensure as a Registered Nurse.
  A program fee of $500 per semester ($1000 per academic year) will be charged to all graduate students in Anesthesia.
  A program fee of $100 per semester will be charged to all students in the Teacher Education Program.
- **Outreach Programs Courses. (See Schedule in Division of Continuing Education section of Catalog.)**  
  **Parking Fee** $39.00*  
  Payable at the beginning of the fall semester for the entire year by students who own or operate a motor vehicle on campus. New second semester students pay $19.75 and new summer session students pay $9.75. Fees are subject to change.
- **Special Examination for Credit**  
  **Fee per Semester Hour** 1/2 the regular credit hour fee  
  *Non-refundable; subject to change.*
ESTIMATED YEARLY EXPENSES

The following table gives an estimate of the expenses of a single, undergraduate student residing on campus during the nine-month, 2000-2001 college year. Detailed information about the cost of attending the University is available from the Office of Enrollment Services.

<table>
<thead>
<tr>
<th></th>
<th>North Minnesota</th>
<th>Contiguous &amp; WUE States</th>
<th>Non-Resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and Fees*</td>
<td>$3,662</td>
<td>$4,104</td>
<td>$5,138</td>
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<tr>
<td>Room and Board**</td>
<td>$3,932</td>
<td>$3,932</td>
<td>$3,932</td>
</tr>
<tr>
<td>Personal Expenses</td>
<td>2,600</td>
<td>2,600</td>
<td>2,600</td>
</tr>
<tr>
<td>Books and Supplies</td>
<td>700</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td><strong>Total Est. Costs</strong></td>
<td><strong>$10,894</strong></td>
<td><strong>$11,336</strong></td>
<td><strong>$12,370</strong></td>
</tr>
</tbody>
</table>

*Plus matriculation fees ($35 one time)

**Costs based on UND residence hall rates (double room and 14 meal contract)

REGULATIONS REGARDING NON-RESIDENT FEES

TUITION FOR NON-RESIDENT STUDENTS (Requirements subject to change without notice): Non-resident students seeking to declare North Dakota residence for tuition purposes must submit an affidavit of residency for the term in which they are currently enrolled to the Business Office by the deadline published in the semester time schedule of classes. For purposes of determining residency, a resident student is defined by law as follows:

1. A person whose guardian, custodial parent, or parents are legal residents of this state and have resided in this state for 12 months, or a dependent child whose custodial parent moved into the state with the intent to establish legal residency for a period of years within the last twelve months immediately prior to the beginning of the academic term. (Applicant must be claimed as a dependent on the parent or guardian’s most recent federal tax return.);
2. A person of age eighteen or over who has been a legal resident of North Dakota for 12 months immediately prior to the beginning of the academic term;
3. A person who graduated from a North Dakota high school;
4. A full-time active duty member of the armed forces assigned to a military installation in North Dakota (does not include National Guard or reserve members);
5. A spouse or dependent of a full-time active duty member of the armed forces assigned to a military installation in North Dakota or of an employee of any institution of higher education in this state;
6. The spouse of any person who is a resident for tuition purposes; or
7. Any other person who was a legal resident of North Dakota for at least 3 consecutive years within 6 years immediately prior to the beginning of the academic term.

Applications for residency are available at the Business Office.

Legal residence in the State of North Dakota includes, but is not necessarily limited to the following responsibilities and rights:

1. To vote in general or special elections in the State.
2. To obtain a North Dakota driver’s license.
3. To obtain a North Dakota license for any motor vehicle owned.
4. To file a North Dakota resident income tax return.
5. To obtain a ND resident game or fishing license after 6 months residency in the state.

International Students: To qualify as a North Dakota resident for tuition purposes, international students who are not refugees must have an Alien Registration Receipt Card (Green Card) proving permanent residency or immigrant status and must meet all the other North Dakota residency requirements for tuition purposes. Refugee students should contact the Business Office for requirements.

MINNESOTA TUITION RECIPROCITY

Residents of Minnesota and their dependents may attend a North Dakota state institution of higher learning and pay a special tuition rate that is lower than the normal non-resident rate. This rate is determined by averaging the tuition costs of the North Dakota and Minnesota state university systems. All UND students from Minnesota are included. To be certified for reciprocity at UND, Minnesota students must (1) file UND’s standard admission application, and (2) file a reciprocity participation application with the Minnesota Higher Education Services Office, Reciprocity Program, 1450 Energy Park Dr., Suite 350, St. Paul, MN 55108-5227. Reciprocity applications are available at the Office of Admissions, or online at www.und.edu/dept/busoff/. Students who previously participated in the reciprocity program and have not earned credit in the previous 12 months must reapply.

CONTIGUOUS STATES/PROVINCES TUITION, FEES

Although residents of South Dakota, Montana, Manitoba and Saskatchewan are not covered by reciprocity agreements, they pay lower tuition and fees than do other non-residents.

WESTERN UNDERGRADUATE EXCHANGE PROGRAM

The University of North Dakota participates in the Western Undergraduate Exchange (WUE) program. Currently, students may enroll in designated programs at selected institutions in Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington, and Wyoming at a special tuition level. For example, those attending the University of North Dakota under the WUE program pay an amount equal to one and one-half times the North Dakota in-state tuition and fees, which in 2002-03 would have totaled $5,138 instead of the normal $8,594 in non-resident tuition and fees for that year.

MIDWESTERN HIGHER EDUCATION CONSORTIUM

The University of North Dakota participates in the Midwestern Higher Education Consortium (MHEC). Currently, students enrolled in designated programs at selected institutions in Michigan, Missouri, Nebraska, and Kansas attend at a special tuition level. For example, those attending the University of North Dakota under MHEC pay an amount equal to one and one-half times the North Dakota in-state tuition and fees, which in 2002-03 would have totaled $5,138 instead of the normal $8,594 for that year.

DEPENDENTS AND SPOUSES OF NORTH DAKOTA UNIVERSITY SYSTEM GRADUATES

Dependent and spouses of North Dakota University System campus graduates may be eligible for a lower tuition and fee rate than other nonresidents. If qualified, students may attend a North Dakota University System institution at a tuition rate of 150% of the resident tuition rate plus all applicable fees. This program applies to all qualified students who are newly enrolled for the Fall 1999 term or later. This category is for undergraduate instruction only.

REFUND OF INSTITUTIONAL CHARGES FOR WITHDRAWN STUDENTS

1. A student who withdraws from the University under normal conditions and after the beginning of instruction will be granted a refund of tuition/fees in accordance with fed-
eral regulations and North Dakota State Board of Higher Education policy 830.2.

2. Institutional charges shall be refunded according to a sched-
ule approved by the Chancellor that provides for a per-
centage refund, which approximates the amount the insti-
tution must return to the Title IV financial aid programs.

3. A student must withdraw officially from the University
within the stated refund period to be eligible for a refund
of tuition and fees. No refund will be made to a student
who is suspended, dismissed, or expelled for breach of dis-
cipline.

4. Any student who has an approved rescind (Room and Board
Contract Cancellation) shall receive a refund for his/her
room and board in accordance with the State Board of
Higher Education refund policy.

5. A student may appeal the refund percentage by submitting
a written request to the Business Office in accordance with
appeal process outlined in State Board policy 830.2 (#5).

SATISFACTORY PROGRESS

Any time you drop a course or withdraw from the Univer-
sity, you may be jeopardizing your federally-funded student fi-
nancial aid, now or in the future. You must successfully complete
at least two-thirds of all courses in which you enroll. Dropping after
the first day of class may not affect your academic standing, but it
may affect your ability to receive financial aid. Please review this
policy and others pertaining to your financial aid in the Code of Stu-
dent Life in the appendix section titled “A Summary of the Standards
of Satisfactory Progress for Financial Aid Eligibility,” or contact the
Financial Aid Office.

REFUND FOR CLASS CHANGES (DROP/ADD)

Students dropping a class during the first seven instructional
class days of the semester will receive a 100% refund of tuition and
fees. After the seventh class day of the semester, there is no refund
for a class which is dropped. However, classes of the same or fewer
credits may be substituted at no additional tuition/fee charge. If the
substituted class requires a special course fee, the student will be
assessed that charge. Correspondence and collaborative courses are not eligible for exchange.

STUDENT FINANCIAL AID

Financial aid is available to students who, without such help,
would be unable to attend the University of North Dakota.

The primary responsibility for financing a college education rests
with the student and family. UND financial aid is viewed as a supple-
ment to family support.

Most student aid is awarded on the basis of need. “Need” is the
difference between cost of education (tuition, fees, room, board,
books, supplies and related educational expenses) and the Expected
Family Contribution, which is the amount the student and family is
expected to contribute, as determined by a standard formula. In de-
termining family contribution, four major sources are considered:
(1) family income, (2) family assets, (3) student’s income, and (4)
student’s assets.

If cost exceeds the family contribution, need will exist; and ev-
ey effort will be made to provide adequate financial aid. To offer
maximum assistance, awards often are made in the form of a finan-
cial aid “package” combining two or more different types of aid (loans,
scholarships, grants, or employment).

The Financial Aid Office final determination regarding the type(s)
and amount of aid awarded is based upon an evaluation of the applicant’s
eligibility for a particular type of aid and upon the availability of
funds under the various aid programs.

Types of Aid. Four different types of financial aid are offered:
(1) employment, (2) loans, (3) scholarships, and (4) grants. Employ-
ment enables recipients to work and earn money. Loans are borrowed
money which must be repaid with interest. Scholarships are gifts
awarded on the basis of academic performance and potential. Grants
are outright gifts of money which do not have to be repaid. Most
financial aid recipients may expect to receive more than one of these
types of aid.

Student Employment. Student employment provides financial
assistance and reduces students’ loan indebtedness. There are sev-
eral student employment programs which complement the students’
learning and give the University the opportunity to utilize student
skills.

Federal Work-Study is a form of federal aid based on financial
need, and is awarded to students as part of their total aid package. A
FWS award indicates a student’s eligibility to seek available FWS
jobs. Wages are paid primarily from federal funds allocated to the
University.

Wages for institutional employment are paid from funds allo-
cated to individual University departments. Financial need is not a
requirement.

All students who work through FWS and/or institutional em-
ployment will be hired at least at the federal minimum wage rate.
Wage rates vary, depending upon the skills required and job respon-
sibilities.

The grievance procedure for student employees is described in the
Code of Student Life.

Job Location and Development (JLD) is a cooperative effort
with Job Service North Dakota to secure part-time work for students
with area businesses. Although financial need is not a requirement,
jobs secured through JLD can be part of a financial aid package.

Veterans Work-Study is a program for veterans attending school
full-time and receiving VA benefits. Veterans can work up to 250
hours a semester and be paid at the minimum wage. Eligibility is
determined by the Veteran Services office on campus.

Information concerning Head Resident, Resident Assistant, Co-
operative Education Program, and/or departmental internships is
available by contacting individual departments responsible for selec-
tion.

Loans. Student loan funds can be categorized into two classi-
fications: long and short term loans. Long term loans are generally
low-interest loans administered by the federal Department of Educa-
tion. Interest rates, eligibility, repayment terms, deferment, and can-
cellation provisions vary with the specific loan program. Some of
the federal loan programs in which the University of North Dakota
participates are: Perkins Loan, Stafford Loan, PLUS, Nursing Stu-
dent Loan, Primary Care Loan. The Minnesota Student Educational
Loan Fund (SELF), Canadian Higher Education Loan Program
(CanHELP) and commercial educational loans are also available at
UND. Many of the commercial education loan programs are avail-
able to students who are not degree-seeking or are enrolled less than
half-time. A more complete listing of private loans is available at the
Financial Aid Office.

Federal requirements require all first time borrowers at UND to
attend an Entrance Loan Counseling session prior to receiving loan
funds. Exit Loan Counseling is also required at the time a student
graduates or drops below half-time enrollment at the University. These
requirements can be completed on the internet at: http://www.und.edu/
depot/finaid.

The short-term emergency educational loan program derives its
funds from different sources provided primarily by private donations.
Short-term loans are to be paid back within 60 days or the end of the
semester, whichever comes first. Students are limited to one short-
15. For 2003-2004, students who were awarded a Student Financial Assistance Grant by the State Grant Program and be considered as an application for the State Grant Program. To ensure that your FAFSA will be received on time, grants range from $400 to $4,050. The availability of these loans may vary based on the amount of federal funds appropriated by Congress. The availability of these loans may be restricted based on the amount of funds remaining.

Scholarships. The scholarship program at the University of North Dakota is one of the best at public institutions of its size. Scholarships are supported by gifts from UND alumni and friends. Because high educational quality comes less expensively at UND than at most other academic institutions, scholarships can significantly help students in their financial preparation for college.

Past academic excellence and the expectation of continued achievement determine the recipients of more than 1850 undergraduate scholarships totaling over $1,215,500 per year. These vary in amounts up to $2,500 per academic year, although most are $250.

Each of the awards is based upon a number of variable factors stipulated by the donors. UND awards scholarships to the most worthy, promising applicants who meet the qualifications of the particular scholarship. Most of the undergraduate scholarships are awarded on the basis of past academic performance.

Scholarships to entering freshmen are usually limited to students who have exceptional ACT scores and who have a high school grade point average (GPA) commensurate with their ACT score. Transfer students and returning UND undergraduate students receiving 4.0 (straight A) averages are awarded scholarships first, and the remainder of the scholarships are awarded to students with the next lower grade point average until all of the money is exhausted.

New students may be considered for all undergraduate scholarships by completing the Honor Scholarship Application form which may be requested by contacting the Office of Enrollment Services. Current students should complete the Returning Student Scholarship Application form which may be requested by contacting the Student Financial Aid Office. Scholarship applications are also available on the internet at http://www.und.edu/dept/finaid.html. Only one application is required to apply for an academic scholarship. Students are matched with scholarships on the basis of previous academic records and information provided on the scholarship application.

Cultural Diversity Tuition Waivers. UND awards several tuition waivers to broaden the cultural diversity on campus. Cultural diversity, for this waiver, is defined as individuals who come from historically under-represented groups (African American, American Indian, Asian American, Hispanic American, and the economically disadvantaged). Application information is available at www.und.edu/dept/finaid or by contacting the Student Financial Aid Office. The priority date for top consideration is April 15.

Grants. The largest of the grant programs, the Federal Pell Grant entitlement program, provides grants to those students who meet the eligibility and need criteria established by Federal regulations. For the 2003-2004 school year, grants range from $400 to $4,050. The exact amount of a Pell Grant depends upon the student’s need and the money appropriated by Congress to fund the program in any given year. Students can receive this grant for the period required for completion of the first undergraduate baccalaureate degree.

Supplemental Educational Opportunity Grants (SEOG) are available to undergraduate students who qualify for the Pell Grant and meet the priority date of March 15. Eligible students enrolled at least half-time may receive grants up to $600 per year.

The North Dakota Student Financial Assistance Program provides non-repayable grants to North Dakota residents to aid undergraduate students in need of financial assistance. The Free Application For Federal Student Aid (FAFSA) serves as the application for the State Grant Program. To ensure that your FAFSA will be received by the State Grant Program, you must list at least one eligible North Dakota college code on the FAFSA. The deadline for priority consideration is March 15. For 2003-2004, students who were awarded a Student Financial Assistance Grant received $600 for the academic year. Additional information may be obtained from the Student Financial Assistance Program, North Dakota University System, 600 E. Boulevard, Bismarck, ND 58505.

Other Sources of Aid. The United States Army and U.S. Air Force provide scholarships to students pursuing studies in the Army ROTC program. Four year scholarships are offered on a competitive basis to outstanding students entering college for the first time. ROTC also offers two and three year scholarships to students who have successfully completed one or two years of college and have been selected as the most qualified applicants for the available awards. Enrollment in ROTC is not a prerequisite to applying for a two or three year scholarship. For information, contact the Military Science Department.

American Indian students should contact their local tribal agency concerning their eligibility for BIA/Tribal Scholarship funds. The awarding of BIA/Tribal Scholarships will be dependent upon the availability of funds.

Any active member of the North Dakota National Guard presently serving in either the Army Guard or the Air Guard may receive a partial tuition reimbursement. Loan repayment assistance is also available. For information on eligibility requirements, contact your local National Guard unit or the Office of the Adjutant General, PO Box 551, Bismarck, ND 58502-5511 or (701) 224-5110.

Veterans may be able to receive special educational assistance. Benefits have also been extended to children, wives and widows of deceased or permanently and totally disabled veterans. The Veteran Service officer on campus can assist in any VA related questions or problems. Applications and more information can also be obtained from any Veterans Administration Regional Office.

Students with a physical limitation or health problem may be entitled to certain benefits such as tuition, fees and textbooks reimbursement. Interested students should communicate with the Division of Vocational Rehabilitation at the nearest district or regional office.

There are many outside agencies and sources which offer financial assistance to students. They are so numerous it is impossible to list them all. However, most libraries have available various types of resource materials in order to review the various sources of aid.

Financial Aid Procedures and Award Policies. March 15 is the priority deadline at the University of North Dakota. To receive top consideration for all programs, students are advised to complete the FAFSA by mid-March as it takes approximately one month for processing. Students must submit the FAFSA or Renewal FAFSA each year.

The Student Financial Aid Office awards aid to the neediest students who have a complete file by March 15. After that date, students’ files are considered by date of FAFSA processing until all funds are awarded. Late applications, as well as those who incorrectly fill out their application materials, may experience a considerable delay in receiving notification of their eligibility and subsequent delivery of any remaining financial aid.

All students whose files are complete will be notified during the early summer regarding the action taken on their application. Recipients of financial aid must accept or reject the aid within 30 days after receiving notice of the award.

Verification. The Department of Education or UND may ask students to prove the information they provided on their applications for financial aid is correct. If students are selected, they may be asked to verify such information as income, federal income tax paid, household size, number in college, status as a dependent or independent student, and citizenship. As part of this process, students must provide the Student Financial Aid Office with their and/or their parents’ Federal Income Tax Return and in some cases, statements from So-
cational Security Administration, Veterans Administration or other agen-
cies to verify benefits the student and/or the student’s family has
received. If information on any of these documents conflicts with the
information reported on the student’s application, they may be re-
quired to provide additional information. Failure to provide proof
may result in the cancellation of aid from all of the Title IV programs
and may also result in the cancellation of aid from other sources.

Federal financial aid received because a student reported incor-
crect information will have to be repaid. Any person who intention-
ally makes false statements or misrepresentations on a Federal finan-
cial aid application is violating the law and is subject to a fine or
imprisonment or both, under provisions of the U.S. Criminal Code.

Satisfactory Academic Progress for Financial Aid Eligibility. To be eligible to receive financial aid, students must meet the
following minimum standards as established by the University:

1) Academic standards: students classified as juniors or se-
niors, and students who have attended UND for two or
more academic years (4 semesters or more) must have a
minimum cumulative grade point average of 2.00. All other
undergraduate students who meet the University’s mini-
num academic standards as defined in the UND Academic
Catalog meet this standard. All students must be eligible to
re-enroll in the next term in order to meet this standard.

2) Rate of progress standards:
   a) students must complete their program of study within
      the maximum number of attempted credit hours
      (undergraduate, 187; graduate, 135; medical, 218; and
      law, 135;
   b) students must successfully complete 2/3 (66.6%) of the
      cumulative credit hours attempted each year. A more
detailed Summary of the Standards of Satisfactory
   Progress for Financial Aid Eligibility may be obtained
from the Student Financial Aid Office.

Repayment of Financial Aid. Financial aid funds can be used
only for educational expenses. Therefore, repayment may have to be
made if a student officially or unofficially withdraws from the Uni-
versity. If withdrawal is before first day of classes, or if the student
fails to pay tuition, all cash disbursements are overpayments and must
be repaid in full. If withdrawal is on or after the first day of classes,
the University will determine the amount of “unearned aid” to be
repaid according to a federal formula. To officially withdraw, a stu-
dent must complete a withdrawal form at the Registrar’s Office, 201
Tweed Hall. If a student does not officially withdraw, the unoffi-
cial withdrawal date will be the student’s last documented date of
attendance or the midpoint of the semester, whichever is later.

Access to Records. In compliance with the Family Educational
Rights and Privacy Act of 1974 as amended, the University of North
Dakota has developed policy guidelines for access to the education
record with respect to the rights of eligible students and parents of
dependent eligible students. All information contained in University
records is considered confidential, except for directory information,
which may be released publicly in printed, electronic, or other form.
Directory information is defined in the Code of Student Life in “Sec-
tion 8-2: Student Records/Directory Information.” Students may re-
strict the release of directory information no later than the tenth class
day of the semester, in person, at the Registrar’s Office, Room 203,
Tweed Hall.
Student Services, Support Programs and Activities

ACADEMIC SERVICES
(see Student Academic Services)

ADMISSIONS OFFICE
205 Twamley Hall
Phone (701) 777-2821

The Office of Admissions reviews and processes all applications for undergraduate admission, determines a student’s eligibility for admission according to university policy, and notifies the student regarding current admission status. The office responds to all inquiries regarding admission policies and procedures, coordinates the admission service with other administrative offices, and compiles data for reports. Permanent university records for all undergraduate students, as well as newly admitted students to the professional Schools of Law and of Medicine and Health Sciences, are created in this office.

AFFIRMATIVE ACTION-
EQUAL OPPORTUNITY COMPLIANCE
101 Twamley Hall
Phone (701) 777-4171 (Voice/TDD)

The Affirmative Action Office is responsible for oversight of the University’s equal opportunity and affirmative action programs, including Sections 503 and 504 of the Rehabilitation Act of 1973; Titles VI and VII of the Civil Rights Act of 1964; Age Discrimination in Employment Act; Title IX of the Education Amendments of 1972; Americans with Disabilities Act; and related Federal and State laws and regulations involving civil rights, equal employment and equal educational opportunity. The University declares that it will not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, or age. It encourages the inclusion of members of minority groups (African-American/Black, Hispanic/Latino, Asian, Native American/American Indian), women in non-traditional roles, persons with disabilities, and Viet Nam era and disabled veterans in the mainstream of University employment, education, and services where these individuals, as a class, may have had limited opportunities in the past. Inquiries, reports, or complaints of discrimination, harassment, or the Family Educational Rights and Privacy Act may be addressed to the Affirmative Action Officer or other designated administrator. Policies and procedures are at www.und.nodak.edu/dept/aao/Pol.htm.

ALUMNI ASSOCIATION AND FOUNDATION
J. Lloyd Stone Alumni Center
Strinden Center
Phone (701) 777-2611

The University of North Dakota has a proud tradition of alumni achievement and loyal and dedicated alumni and friend support. Alumni and friend involvement has provided a “margin of excellence” for many of the programs offered by the University of North Dakota. Two private, non-profit organizations, the UND Alumni Association and the UND Foundation, have responsibility for coordinating alumni relations and fund-raising programs. Policies for the Association and the Foundation are set by a 24-member Board of Directors. Program and office operations are under the direct supervision of an Executive Vice President. The Association and Foundation are headquartered in the J. Lloyd Stone Alumni Center (formerly Oxford House), the historic, restored home of early UND presidents, and in the Strinden Center, 3100 University Avenue.

The Alumni Association and Foundation have a unique working relationship which differs from similar organizations at many colleges and universities. Both organizations are managed by the same board of directors and the same executive vice president. The Foundation receives private gifts for the benefit of the total University of North Dakota and also acts as a trustee in deferred giving arrangements and for named endowment funds. The staff of the Alumni Association conducts all fund raising activities for the Foundation. The Alumni Association and the Foundation have a closely coordinated and integrated alumni relations and fund raising program which involves the maintenance of records and current addresses for all graduates and former students, on- and off-campus alumni events, and alumni tours. The Alumni Review, a bi-monthly newspaper, is mailed free of charge to over 100,000 graduates and former students. The fund raising programs include an annual sustaining drive, major gift programs, the promotion of UND Foundation giving clubs, and the marketing of deferred giving programs, including life income arrangements for alumni and friends.

In conjunction with the 1983 University of North Dakota Centennial, the Alumni Association and Foundation conducted a Centennial Endowment National Campaign which raised over $26 million in direct, pledged, and deferred gifts. This was followed in 1991-92 with a “Thank You, President Tom Clifford Campaign” which resulted in gifts and commitments exceeding $25 million. The Foundation recently completed the “21st Century Campaign,” a five-year effort launched in July 1995, raising $50 million in new gifts, pledges and commitments. The Foundation manages assets in excess of $120 million, much of which is endowed for perpetual support of scholarships, faculty enhancement programs, and other priority needs at the University of North Dakota.

Over the years, the University of North Dakota alumni have been generous in supporting their Alma Mater and have assisted several major University projects, including the establishment of a number of scholarship and loan funds, providing for faculty awards, and making possible in part or total several buildings on the University of North Dakota campus. This includes financial support for the UND Memorial Union, a swimming pool in the original Fieldhouse, the Winter Sports Center, the Ray Richards Golf Course, the Chester Fritz Library, the Chester Fritz Auditorium, Gamble Hall, the Hughes Fine Arts Center, Ireland Cancer Research Laboratory, Burt Ness Theatre, and the Fox Service Complex. In 1993 the UND Foundation completed a successful drive which raised over $4 million for the construction of a Bio-Information Learning Resources Center for the UND School of Medicine and Health Sciences. UND alumni and friends have also made contributions for research and lecturerships and have given financial support to many activities on the UND campus, including music and athletics. The Alumni Association and Foundation administer nearly 2,000 separate accounts to facilitate private contributions to support every college, department and activity at UND.

In 1981 TELESIS, a student alumni group, was established to involve students in alumni activities and to give current students contact with outstanding alumni achievers.

AMERICAN INDIAN STUDENT SERVICES
317 Cambridge Street
Phone (701) 777-4291

American Indian Student Services (AISS) are designed to promote and foster the academic and personal success of American Indian students enrolled at the University of North Dakota. AISS works
directly with the UND Enrollment Services Office to actively recruit American Indian high school and community college students and introduces these new students to UND by serving as an information and resource center.

Services are provided to assist students in their transition to the University through the student support and student academic service components at AISS. The student support component provides both academic and personal advisement. AISS will also assist new and transfer students with University orientation, early registration process, academic advisement, financial aid and scholarship information, general information, referral resources, and becoming involved in the peer advisor program. The student academic services component strives to meet the scholarly needs of the American Indian student at UND. Students are encouraged to utilize the tutoring services, free of charge. Tutors are available on a daily basis in Math, Natural Sciences, Physics, Chemistry, Indian Studies, and writing assistance. AISS also sponsors study skills, time and money management, and writing workshops. The American Indian Student Learning Lab provides opportunities for students to enhance their computer skills.

The American Indian Center itself houses AISS and the Student Learning Lab. The American Indian Center serves as an academic and social gathering area for American Indian students, while providing the students “a home away from home.” American Indian student organizations and programs, faculty, and staff host a variety of cultural activities, meetings, academic enhancement workshops, etc., at the Center.

ART MUSEUM
(see North Dakota Museum of Art)

ATHLETICS
(see Intercollegiate Athletics)

AUDITORIUM
(see Chester Fritz Auditorium)

CAREER SERVICES
280 McCannel Hall
Phone (701) 777-3904

Career Services’ goal is to assist students and alumni in planning for and carrying out their job searches. This is accomplished through individual and/or group assistance in job search techniques, resume/cover letter writing, and interviewing skills. Cooperative Education, a component of Career Services, works with employers and academic departments to provide opportunities for students to combine course work with practical, professional employment in their chosen fields.

The Career Services office coordinates activities such as on-campus interviews, provides specialized workshops, and holds three Career Fairs annually. The resource library houses labor market information, audiovisual materials, company literature, computerized job information systems, and direct on-line access to the Internet. Students in all disciplines are encouraged to register. Registration is done on-line via the Career Services homepage. Once registered, students will have access to job openings, become available to employers searching the data base, and be able to sign up for Cooperative Education opportunities and on-campus interviews.

CHESTER FRITZ AUDITORIUM
Phone (701) 777-3076

The 2,400-seat Chester Fritz Auditorium is used for a variety of events. It is the site for graduations, symphony concerts, lectures, workshops, Broadway shows, and concerts by major stars.

The auditorium, an integral part of the University intellectual and social environment, has a three-fold mission: (1) As a cultural and educational resource for the University and community; (2) For general entertainment, ranging from contemporary performers, the art of dance, and the literature of theatre; and (3) As a public facility to be used by both University and non-university programming groups.

CHILDREN’S CENTER, UNIVERSITY
525 Stanford Rd.
Phone (701) 777-3947

The University Children’s Center offers child care to parents who are students or employees at UND and also to parents of the greater Grand Forks community. The Center serves children ages 21/2-5 years old. Children who attend the Center in the public school are also served half-days. The Center is open five days a week, 7:30 a.m. to 5:30 p.m., during the UND academic year and summer session. Children in first through third grade are also served at the Center during the summer. Daily attendance is limited to a full-time equivalency of 103 children, with no more than nine children being cared for by each teacher.

The Center provides quality care and education to children from a variety of ethnic, cultural, socio-economic, and educational backgrounds and to children with special needs. Teachers have four-year degrees or are students-in-training from the Early Childhood Education Department at UND. The Center is licensed by the North Dakota Department of Social Services and has been accredited by the National Academy of Early Childhood Programs. The Children’s Center is currently awaiting a verification visit from the Academy.

For more information, you are welcome to come to 525 Stanford Road for a tour and visit. Call (701) 777-3947 or write the University Children’s Center, Box 9026, Grand Forks, ND 58202-9026.

COUNSELING CENTER
200 McCannel Hall
Phone (701) 777-2127

The Counseling Center offers a variety of programs and services for University students. It is a resource which provides assistance in solving personal problems, making career choices, addressing substance use or abuse issues, developing educational skills, and reaching academic goals.

Center services may be requested by visiting 200 McCannel Hall anytime between 8:00 a.m. and 4:30 p.m., Monday through Friday, or by calling (701) 777-2127. A receptionist will direct your request or inquiry to the appropriate staff person and/or set up an appointment for you. Services are available M-F, 8:00-4:30. Limited evening hours and services also are available at the Community Center.

All Center services are free of charge except where otherwise indicated. All contacts are confidential. The specific Counseling Center services are as follows:

Individual Counseling and Therapy. The Center offers counseling for individuals and couples in an effort to meet a variety of personal-social, career and academic needs. Students seek assistance for a number of reasons: developing a sense of competence in a new environment, meeting increased academic or social demands, making career decisions, resolving interpersonal conflicts, and adjusting to the University.

Testing Services. The administration of the College Level Examination Program (CLEP) and numerous graduate or professional school entrance examinations (GRE Subject Exam, LSAT, MCAT, etc.) are done by Testing Services. In addition, the administration and interpretation of career, self-assessment, or ability inventories is available through the Center. There may be a small charge for some of the tests and assessment instruments.
Career Counseling Services. Career Counseling Services offers assistance to help UND students make informed and satisfying decisions about career and educational goals. Counselors are available for students who want personal, on-going career counseling. Students may opt for individual career counseling for a variety of reasons including increasing stress or anxiety about career decision making, returning to school, making a career change, and balancing multiple roles and responsibilities.

Substance Abuse Prevention Program. The University Counseling Center is a primary resource for issues and concerns related to alcohol and other drug use. Consultation is available to students, faculty and staff regarding alcohol and other drug use/abuse. There is also a staff addiction counselor available for alcohol and other drug evaluations or assessments. In addition, the Alcohol and Drug Abuse Prevention Team (A.D.A.P.T.) provides education and resources on alcohol, other drugs and wellness issues. Trained undergraduate peer educators research, develop, and present alcohol awareness programs to residence halls, Greek organizations, and other student groups throughout campus.

Groups and Workshops. The group counseling and workshop program provides small group experiences and workshops in skill development and personal growth. Issues and concerns addressed by this activity include assertiveness, career and personal exploration, stress management, eating disorders, relationship skills, and drug and alcohol awareness.

DEAN OF STUDENTS OFFICE AND ASSOCIATE VICE PRESIDENT FOR STUDENT SERVICES
180 McCannel Hall
Phone (701) 777-2664

The Dean of Students Office assists current and prospective students in meeting various needs and also serves as a liaison among the diverse populations of students, faculty, staff, the UND community, the state, and the region. The Dean of Students Office personnel enhance and support the educational experience of students by identifying needs and providing tools and opportunities for students to learn and grow in a community which honors scholarship and respects differences in thought and appreciation of individual differences. The Dean of Students Office personnel provide support of the various constituencies through consultation with faculty, students, and staff. Students are treated as responsible citizens capable of making decisions for themselves and taking responsibility for their actions and decisions. The Associate Vice President for Student Services provides assistance to the Vice President for Student and Outreach Services in areas of planning, budgeting, and professional development and training for the Student Services Division.

The Dean of Students Office provides the following services:
- Advocacy/Ombudsman for Student Issues
- Student Judicial Affairs
- Crisis Programs
- Initiation of Programs
- Special Circumstance Late/Drop Withdrawal from UND
- Programs to Increase Student Satisfaction

DINING SERVICES
(see Residence Services)

DISABILITY SUPPORT SERVICES
190 McCannel Hall
Phone (701) 777-3425 (Voice or TTY)

UND recognizes its responsibility for making reasonable accommodations/adjustments to ensure there is no discrimination on the basis of disability as established under Section 504 of the Rehabilitation Act and the Americans with Disabilities Act.

Disability Support Services (DSS) is the office to which students with disabilities initiate requests for accommodations. The request must come from the student, not from an advocate (e.g. parent or other service provider). The student must submit current documentation so that reasonable accommodations can be arranged. For more information, contact DSS at (701) 777-3525 V/TTY. We are on the web at: http://www.und.edu/dept/dss/

ENROLLMENT SERVICES, OFFICE OF
312 Twamley Hall
Phone (701) 777-4463
(701) 777-3367 TTY Service Only

The Office of Enrollment Services is the central contact point for dissemination of enrollment information about the University of North Dakota. The primary mission of Enrollment Services is to inform, counsel, and assist prospective students regarding admission, housing, academic programs and campus procedures. The office provides tours of campus as well as sends general information and applications for the University. Additional information about visiting campus may be found in the Visitor Information and Tours of Campus sections.

EXTRACURRICULAR OPPORTUNITIES

As a complement to classroom instruction, individual colleges and departments, residence halls, fraternal organizations, Student Government, University Program Council, and other groups sponsor programs of social, cultural, educational and physical activities which contribute to the personal growth of students at the University. Recreational activities provided by various departments and organizations include games and sports, social functions, dramatics, dances, music, films, lectures, and other programs throughout the year. In addition, students may choose to participate in over 200 recognized student organizations, which are formed around academic pursuits, politics, cultural, religion, service and other interests.

Believing that such participation contributes to the total development of the student, the University encourages students to participate in the extracurricular programs. Complete information about student activities and volunteer opportunities are available from the Student Organizations Center in the Memorial Union.

FINANCIAL AID OFFICE
(see Student Financial Aid Office)

FOOD SERVICE
(see Residence Services)

FRATERNITY AND SORORITY MEMBERSHIP

Thirteen national social fraternities and seven national social sororities maintain houses adjacent to the campus in which residence and, in some instances, dining facilities are available to members. Costs for room and board are approximately $2,300 (low end average) per year. There are other costs, such as dues and initiation fees, which also vary.

Eligibility for membership in a fraternity or sorority is a mutually selective process between the individual chapters and individuals seeking membership within the framework of University policy. All individuals meeting certain minimum standards are eligible to join a group. Membership recruitment typically occurs at the beginning of the Fall and Spring semesters.

Greek life affords the student a small group experience with opportunities for learning about interpersonal relationships, leadership, informal contact with administrators and faculty, and social relationships.

For further information, please contact the Coordinator of Greek Life in the Memorial Union, University of North Dakota, Grand Forks, University of North Dakota
GENERAL COUNSEL, OFFICE OF
104 O’Kelly Hall
Phone (701) 777-6345

The Office of General Counsel is comprised of the General Counsel and the Associate General Counsel. As the chief legal advisors to the President, officers, faculty, and staff of the University, members of the Office of General Counsel are responsible for handling all legal matters affecting the University. This office is also responsible for approving all requests for the use of off-campus legal counsel and the supervision thereof. Requests for outside legal services should be routed through the appropriate vice president. Services are not available to students.

HEALTH SERVICE
(see Student Health Service)

HONOR SOCIETIES

Alpha Eta Rho (1966) is an international aviation fraternity.
Alpha Kappa Delta (1966) is open to all students who have an interest in current social issues and a willingness to discuss feasible solutions and participate in activities which address those issues.
Alpha Lambda Delta (1950) aims to interest freshmen in the pursuit of learning and in high scholastic achievement.
Alpha Phi Omega (1947) is a National Service fraternity of former Boy Scout members.
Alpha Tau (1921) is the student organization of industrial technology.
Beta Gamma Sigma (1926) elects to membership a limited number of academically outstanding students from the primary disciplines in Business Administration.
Beta Alpha Psi (1923) elects from junior, senior and graduate students in accounting. Election is based on scholarship and promise in the field.
Delta Pi Epsilon (1963) is the national honorary graduate fraternity for students of superior scholastic achievement in business education.
Delta Theta Phi promotes awareness of the role of the lawyer in the community and to further the objectives of the fraternity.
Epsilon Pi Tau is the international honorary professional fraternity for education in technology.
Eta Kappa Nu (1962) elects to membership a limited number of academically outstanding students in electrical engineering from the School of Engineering and Mines.
Gamma Sigma Alpha is a national greek honor society which recognizes juniors and seniors with a GPA greater than 3.5.
Gamma Theta Upsilon (1948) is a professional fraternity, has for its purpose the recognition of merit among those enrolled in the study of geography.
Golden Key National Honor Society (1996) recognizes and awards academic achievement for upperclassmen.
International Honor Society in Pharmacy (IHP) recognizes exceptional students.
Magna Kappa provides social as well as academic outlet for graduate students in the counseling department.
Mortar Board (1932) aims to foster the ideal of service and to promote leadership and scholarship.
Omicron Delta Epsilon confers distinction for academic excellence in economics.
The Order of the Coif (1925) elects its members from the upper 10 percent of the third-year class in Law School.

Order of Omega (1984) is a society which recognizes service to community and academic achievement among members of the Greek system.
Phi Alpha (1962) elects to membership academically outstanding students of at least junior status who are majoring in social work.
Phi Alpha Delta (1911) is a fraternity in the School of Law.
Phi Alpha Theta (1948) aims to recognize excellence among those enrolled in the study of history.
Phi Beta Kappa (1913) elects to membership a limited number of academically outstanding students from the College of Arts and Sciences.
Phi Beta Lambda (1970) is a national organization for students enrolled in business, office, or business teacher education programs.
Phi Delta Kappa (1924) elects those in the Center for Teaching and Learning on the basis of scholarship, personality, and professional ability.
Phi Eta Sigma (1929) elects to membership sophomores on the basis of high scholastic achievement as freshmen.
Pi Omega Pi (1951) aims to promote scholarship in business education.
Pi Sigma Alpha (1982) is an honorary society for political science and public administration.
Pi Theta Epsilon (1968) junior and senior students majoring in occupational therapy selected on the basis of scholarship.
Psi Chi is an honorary society in psychology.
Sigma Alpha Iota (1916) endeavors to uphold standards of music education.
Sigma Gamma Epsilon (1950) is a professional fraternity dedicated to the advancement of its members in the earth sciences, geology, mining, metallurgy, ceramics, and petroleum engineering.
Sigma Iota Epsilon (1996) is a national honorary society for students in the field of management.
Sigma Xi (1919) chooses its members from the faculty and graduate students on the basis of their aptitude in scientific research. Undergraduates are eligible for associate membership.
Society of Professional Journalists (1922), formerly Sigma Delta Chi, encourages the maintenance of high standards for journalism.

(National Student) Speech-Language-Hearing Association (1966) for majors in the area of speech pathology and audiology.
Tau Beta Pi (1974) (formerly Sigma Tau) elects to membership a limited number of academically outstanding students from the School of Engineering and Mines.

HOUSING
(see Residence Services)

HUMAN RESOURCES, OFFICE OF
313 Twamley Hall
Phone (701) 777-4361

The Office of Human Resources supports a fair and equitable work environment by providing management and development training to supervisors and staff, a fair and effective salary administration program, a broadbanding program including market data information, advisement on policies and procedures on wage and employment regulations, an effective performance management program, and successful staff recognition programs. These services contribute to the mission of the University by the recruitment, retention and development of a qualified work force.

The Office of Human Resources adheres to the University’s equal opportunity/affirmative action policies. Additional information on employment at the University may be obtained from the Office of...
Human Resources, Box 8010, Grand Forks, ND 58202, telephone (701) 777-4361; e-mail human.resources@mail.und.nodak.edu, or visit our web site at: http://www.humanresources.und.edu. The Office of Student Financial Aid should be contacted by students seeking part-time employment.

INFORMATION TECHNOLOGY SYSTEMS & SERVICES (ITSS)
Upson II
Phone (701) 777-3171
URL http://www.und.edu/dept/itss

ITSS is a member of the North Dakota Higher Education Computer Network (ND-HECN) which provides faculty, staff, and students the ability to communicate around the globe via electronic mail, access the Internet, and use NSF supercomputers, as well as supplement research by examining databases and current information throughout the world.

ITSS services and support at UND include computer clusters and labs running general purpose software and office suites, training workshops, manuals, newsletters and documentation, microcomputer consulting, mainframe consulting, local area network (LAN) consulting, electronic mail, Internet access, telecommunications and network services.

The Help Desk provides a single contact point for users who need help with computing problems or questions. Services include problem determination, assistance, and answers to users’ common computing questions. Contact the Help Desk by telephone (701) 777-2222, e-mail (ITSS.Help@mail.und.nodak.edu), submit problems via the Remedy web page (http://www.helpcenter.nodak.edu), or visit in person (Upson II, Room 366). The Help Desk telephone is answered from 5 a.m. to 1 a.m., seven days a week. Most forms needed to request access to any ND-HECN or UND system are available on the ITSS web page, at the reception counter in the ITSS office, or call the Help Desk for further information.

INSTRUCTIONAL & LEARNING TECHNOLOGIES, CENTER FOR
http://www.cilt.und.nodak.edu/
Robertson Hall
777-2129

The Center for Instructional & Learning Technologies (CILT) is an instructional support unit in the division of Academic Affairs. The primary mission of the Center is to provide leadership and support for the enhancement of teaching and learning through the appropriate integration of technology.

Through an array of services and scheduled programming, the Center is committed to assist faculty in meeting the challenges facing higher education in the 21st century. We acknowledge the importance and value of technology, but also recognize that its use should be based primarily on UND’s educational mission and values.

The Center is an environment where faculty can discover and explore new ideas, acquire new skills, create and enhance instructional materials, and share collegial experiences. Services for faculty include graphics and photography, instructional design, project consultation and support, web page design, classroom technology services and support, presentation development, videotaping, audio and video duplication, and workshops for faculty.

INSTRUCTIONAL DEVELOPMENT, OFFICE OF
407 Twamley Hall
Phone (701) 777-3325

The Office of Instructional Development (OID) is dedicated to enhancing the quality of teaching and learning at the University of North Dakota. Through its various activities, programs, and resources, OID promotes campus-wide conversations about teaching, fosters innovation in curriculum and instruction, recognizes excellence, and encourages the continued professional development of faculty as teachers.

In addition to providing grant support for teaching-related faculty travel and instructional projects, OID coordinates the Alice T. Clark/UND Foundation Mentoring Program for new faculty, sponsors faculty workshops and lunch discussion groups, offers consulting to individual faculty and departments, and provides other teaching-related services to UND faculty. OID also serves as the administrative home of the Writing Across the Curriculum program.

The Office of Instructional Development is located in Twamley Hall, Room 407. Phone (701) 777-3325. E-mail: oid@und.nodak.edu. Web site: http://www.und.nodak.edu/dept/oid/

INTERCOLLEGIATE ATHLETICS
Room 101 Hyslop Sports Center
Phone (701) 777-2234

A program of men’s intercollegiate athletic competition is offered in football, baseball, basketball, hockey, track and field, golf, cross country, and swimming and diving. The women’s program includes competition in basketball, cross country, golf, track and field, swimming and diving, soccer, hockey, softball, tennis, and volleyball. Many club and intramural activities are also available.

General policies are determined by the president and the faculty and students of the university. In establishing athletic policies, the administration is mindful of the contributions that athletic participation, at an advanced level, can make toward achievement of the fundamental goal of a liberal education. Every effort is made to keep the athletic program compatible with that goal.

The program not only provides a powerful motivating force, encouraging the development of bodily strength, skill and agility, but also affords opportunity for invaluable experience in self discipline and cooperation. The competitive events themselves provide recreation and entertainment for the entire student body and contribute toward the development of student loyalty and morale.

INTERNATIONAL PROGRAMS, OFFICE OF
International Centre, 2908 University Avenue
Phone (701) 777-6438
FAX (701) 777-4773
oip@sage.und.nodak.edu
http://www.und.nodak.edu/dept/oip/index.html

The UND Office of International Programs supports and develops academic programs on campus and abroad to help prepare students to deal effectively with the growing interdependence of the world as well as provides UND’s international population with a variety of immigration and student services. Our goal is to promote and enhance the understanding of different countries and cultures.

To achieve these goals, the Office provides the following services:

- Advises international students, faculty, and staff on immigration, personal, and acculturation needs;
- Sponsors intercultural events and promotes International Organization activities;
- Coordinates the International Student Exchange Program (ISEP), through which UND students may study at one of more than 100 universities throughout the world;
- Coordinates UND exchange programs in several countries around the world;
- Advises students on study abroad programs not associated with UND;
- Provides information on Fulbright grants and other international faculty exchanges and development programs;
INTRAMURAL-RECREATIONAL SPORTS
261 Hyslop Sports Center
Phone (701) 777-4330

Intramural-Recreational Sports offers a diverse array of competitive and non-competitive sports to all UND students, faculty, and staff in men’s, women’s, and co-recreational sports. Sports include: aerobics, badminton, basketball, sand volleyball, broomball, golf, hockey, in-line hockey, racquetball, soccer, softball, tennis, and volleyball. Intramural-Recreational Sports is administered and officiated by students, with facilities including the Engelstad Arena, Hyslop Sports Center, Ray Richards Golf Course, and the use of Grand Forks Parks and Apollo Park Softball Complex.

Intramural-Recreational Sports fosters a spirit of competition and sportsmanship within an avant-garde recreation program with activities to enhance physical and mental health. For information, call (701) 777-4330 or come by Room 261, Hyslop Sports Center.

LABORATORY EDUCATION FOR NORTH DAKOTA (LEND) PROGRAM
School of Medicine and Health Sciences
Phone (701) 777-3201

The LEND program mission is to deliver quality and contemporary information and experiences for clinical laboratory professionals to rural communities in North Dakota and the region. The program includes course offerings to laboratory professionals by distance learning for graduate, undergraduate, and continuing education credit. Each year the LEND program has over 1,200 participants at 70 plus sites throughout North Dakota. The program is an important link for lifelong continuing education opportunities for residents of North Dakota.

LEARNING CENTER, UNIVERSITY
201 Memorial Union
Phone (701) 777-4406

The University Learning Center provides a wide range of educational skills assistance for university students. Professional staff members are available to work with students on an individual basis to assess and identify learning strengths and needs.

Academic assistance is available through the following services: (1) free drop-in tutoring; (2) individual assistance with learning concerns; (3) assessment of test anxiety, learning styles and reading comprehension; (4) computer assisted instruction along with study skills workshops and development seminars, and one-credit courses (A&S 250) Intro to Effective Study Skills, Rapid Reading, and College Reading. The University Learning Center is committed to maximizing the lifelong learning potential of all students.

The University Learning Center accepts applications for peer tutors throughout the year. The Center’s hours are: offices, M-F, 8am-4:30pm; for consultation for students, staff, and faculty; and the Drop-In Tutoring Lab is open M-Th, 10am-8pm.

LEGAL COUNSEL
(see General Counsel)

LIBRARIES

The University of North Dakota supports the largest and oldest library system in the state of North Dakota. With holdings numbering over 3 million items, the UND libraries are a major resource for students and researchers on campus, in the State, and through the University’s distance education network. The University’s library system includes the Chester Fritz Library and branch libraries (Energy & Environmental Resource Center, Geology, and Music), and the Thormodsgard Law Library and Harley E. French Library of the Health Sciences, which serve the graduate professional schools of law and medicine.

The University libraries provide scholarly information and publications in print, microform, audio-visual, and digital formats. Many of the digital resources are available through computer networks allowing access from campus, home, office, and off-campus locations. The Chester Fritz Library’s holdings include significant collections in the humanities, social sciences, science and technology, education, business, and the fine arts. It is also a major depository for state and federal documents. The Chester Fritz Library administers the only U.S. Patent and Trademark collection in the state and maintains the North Dakota State Department of Public Instruction’s Special Learners Collection. The Library’s Elwyn B. Robinson Special Collections include published works and manuscripts documenting state and regional history and the history of the University of North Dakota.

The UND libraries are major contributors to the Online Dakota Information Network (ODIN), a statewide online catalog of library collections and resources. Through ODIN, students and researchers may conduct computer-assisted searches for information about materials held in the University of North Dakota libraries and in other libraries throughout the state.

The University’s libraries are members of many national and regional library consortia. Through these cooperative arrangements, the UND libraries are able to acquire informational resources not held locally. The libraries’ Interlibrary Loan departments will help students obtain materials from other libraries for their use at UND.

The libraries provide educational services including reference assistance and instructional sessions. Librarians are available for individual consultation in the libraries as well as presentations in the classrooms.

Access to additional information about the libraries is available through the University of North Dakota homepage at: http://www.und.edu.

MEMORIAL UNION
Phone (701) 777-3926
(701) 777-4482 TTY Service Only

The Memorial Union provides a host of services to the University community, including meeting rooms from small to ballroom size, teleconference facilities, Service Center/Copy Stop (check cashing, newspapers, photocopying, fax), Off Campus Center, Craft Center, and Sign and Design Studio. Food service options include: Subway, TCBY, Juice Works, Little Caesars, the Terrace Dining Center, and Campus Catering. Space in the Union for meetings or displays may be reserved by calling Central Scheduling at (701) 777-3928 or by stopping in on third floor. Another service offered at the Union is Info Center, which has information on most University events and services on a walk-up or phone-in basis (701) 777-4321. The Lifet ime Sports Center, located on the ground floor, offers billiards, foosball, ping pong, coin-operated games, and television lounges. Outdoor
equipment rentals, including canoes, camping equipment, and cross country skis, are also available. Leadership and personal development as well as advising of campus organizations are provided by the Leadership Development Program, Student Organizations Center, and Greek Life departments. Also located in the Union are Student Government, University Learning Center, Student Academic Services, the Computer Learning Labs, University Credit Union, the Traffic Division parking services office, Passport ID, and Campus Barbers. The Union can also help students learn about and connect to volunteer opportunities in the local community.

**MULTICULTURAL STUDENT SERVICES**
2000 University Avenue
Phone (701) 777-4259

Multicultural Student Services (MSS) provides quality support services (academic, financial aid, personal, and social) which will enhance African American, Asian American, and Hispanic American student success at the University of North Dakota. MSS serves as a general institutional contact and advocate for students, individually and collectively, and works with UND departments and offices to address the unique needs of students. The director provides advice and counsel regarding broad campus issues and promotes diversity throughout the campus while enhancing diversity in the Grand Forks and Grand Forks Air Force Base communities as well as on the UND campus.

**MUSEUM**
(see North Dakota Museum of Art)

**NORTH DAKOTA MUSEUM OF ART**
Centennial Drive
Phone (701) 777-4195

The North Dakota Museum of Art, founded in 1972, is both the official art gallery of the State of North Dakota and the University of North Dakota’s art museum, with a primary focus on contemporary art by regional, national, and international artists. Exhibitions featuring an array of sculpture, painting, ceramics, photography, jewelry and other art forms change every six weeks. There is a Museum Shop and the Museum Cafe. Lectures and concerts are scheduled in the Museum on a regular basis. Located on Centennial Drive, south of Twamley Hall, the Museum and Museum Shop hours are Monday through Friday, 9 a.m. to 5 p.m., and Saturday and Sunday, 1 p.m. to 5 p.m. There is no admission charge.

**REGISTRAR, OFFICE OF THE**
201 Twamley Hall
registrar@mail.und.nodak.edu
Phone (701) 777-2711

The Office of the Registrar maintains the academic record of each student enrolling for courses through UND’s instructional delivery systems. The University Registrar is Secretary to the University Senate. The Office is responsible for monitoring all academic policies and procedures relative to curriculum, registration, and grade processing. The transfer area evaluates transcripts and maintains transfer articulation agreements. The Office of the Registrar is responsible for institutional research and analysis.

**RELIGIOUS ACTIVITIES**

A number of campus religious groups are available with a variety of individual and cooperative programs. Campus Ministry Association includes Christus Rex Lutheran Campus Ministry (the Evangelical Lutheran Church in America), Wittenberg Lutheran Chapel (the Lutheran Church Missouri Synod), St. Thomas Aquinas Newman Center (Catholic Campus Ministry), and United Campus Ministry representing the American Baptist, Episcopal, Presbyterian (U.S.A.), United Church of Christ, and United Methodist Churches. Each of these centers has at least one full-time staff person, with programs including worship, fellowship, bible study, Christian education, and service to the community. Community parishes are also welcoming of UND students.

Some of the other groups active on campus are Inter-Varsity Christian Fellowship, Campus Crusade for Christ International, Baha’i, and Muslim Student Association. These groups have members of the University faculty as advisers.

**RESEARCH AND PROGRAM DEVELOPMENT, OFFICE OF**
105 Twamley Hall
Phone (701) 777-4278

The Office of Research and Program Development (ORPD) collects and disseminates information regarding research programs sponsored by federal agencies, state agencies, foundations, and industrial organizations. Research program information that may be of interest to UND faculty, students, and staff is distributed widely throughout the campus. The ORPD staff provide application materials, identify potential funding sources, and assist with proposal planning and development.

The Director of ORPD is the official authorized by the University to sign all proposals submitted to external agencies. Before proposals are submitted to ORPD for administrative review, the proposed budgets are checked and approved for compliance with the financial policies of funding agencies by Grants and Contracts Administration (GCA). The signing official is responsible for providing requested certifications and to assure compliance with policies and regulations required by the Federal government and other funding agencies. These policies and regulations involve human subjects, animal care and use, copyrights, intellectual property, radioactive materials and recombinant DNA. The negotiation of contracts, grants, subcontracts, and subgrants is a joint process involving GCA, ORPD, and the Principal Investigator.

ORPD also provides administrative support to the Senate Scholarship Activities Committee, the Faculty Research Seed Money Council, and to committees required by Federal regulations, particularly the Institutional Review Board, which approves research projects involving human subjects; the Institutional Biosafety Committee, which approves research projects involving DNA; and the Senate Conflict of Interest/Scientific Misconduct Committee.

**RESIDENCE SERVICES**

**Dining Services**

The University has three dining centers serving a wide variety of daily meals consisting of two or more entrées, vegetarian entrée, soups, salads, and specialty food bars. Residence hall students are required to purchase a meal plan. Off-campus students, faculty and staff are welcome at any dining center and may pay cash or purchase a meal plan for more frequent dining. Open dining allows all customers to eat at any of the three dining centers. The Dining Centers are located in Wilkerson Hall, Squires Hall, and the Memorial Union.

National franchise food selections are located on the main level of the Memorial Union. The Food Court includes Subway, TCBY, Juice Works, and Little Caesars Pizza. A second Subway is located in Johnstone residence hall.

A variety of breakfast and lunch items are also available at other locations across campus: the Twamley Snack Bar located on the fourth floor of Twamley Hall; the Medical Science Snack Bar located in the atrium of the School of Medicine and Health Sciences; and the Wing’s Café located on the 5th floor of the UND Aerospace Administration Building at the Airport.
Both Wilkerson Hall and Walsh Hall offer a convenience store open to all faculty, staff and students. There is also a convenience store and coffee house with bakery goods located on the main floor of the Memorial Union.

Private dining rooms and catering services are available for students, faculty, staff, and groups associated with the University. Contact Campus Catering at (701) 777-2256.

Complete information about Dining Services may be obtained by visiting the website at: http://www.dining.und.edu or calling (701) 777-3823.

Housing

The Housing Department supports the academic mission of the University by providing comfortable, affordable and well-maintained accommodations to meet the changing needs of students. Student living facilities at the University of North Dakota include residence halls, single student apartments, and family student apartments.

University Residence Halls

Residence halls are designed to provide a comfortable, diverse living environment for students while they are enrolled in the University. A solid network of nationally recognized residence hall staff works to enhance the personal and social development that complements the out-of-classroom experience. UND has 14 residence halls which are conveniently located throughout campus. All halls have laundry facilities, kitchenettes, study areas and access to the residence hall fitness center. Individual rooms have cable TV service and direct connection to the Internet. Students must be enrolled at UND with a minimum of 12 credits to live in the residence halls. Complete information may be obtained by visiting the web site at: www.housing.und.edu, or by contacting the Housing Office, University of North Dakota, Box 9029, Grand Forks, ND 58202-9029, (701) 777-4251.

Applications. Applications are available from the Enrollment Services Office, the Housing Office, or on-line at: www.housing.und.edu. Room assignments are made in accordance with the established priority system which is determined by the date of the receipt of the non-refundable application fee. Early application is encouraged.

Room and Board Contract. Residence hall room and board contracts are for the entire academic year (fall and spring semester), fall semester only, spring semester only, or summer session. Students will receive a copy of the contract containing cancellation dates and refund policies for the year in which they are applying. The contract is revised annually. Rates will be sent to all students following approval by the UND President’s Office. The cost of a double room with a 19-meal (per week) board plan was $3,987 for the 2002-03 academic year. Naturally, in case of illness, or other special reasons, consideration is given. A student whose registration is cancelled for any reason is required to vacate.

Facilities. All residence halls include desks, single beds (mattresses are 36” x 80”), dressers, chairs, drapes, and wastebaskets. Students will need to bring bed linen, blankets, study lamps, towels, bedspreads, and pillows. Mail service and telephone lines are provided; however, the student will need to bring his/her own phone.

University Apartments

The University maintains several hundred apartments for families and single students. Residents have access to the University Children’s Center (childcare) and enjoy a variety of social and cultural events at the University Apartment Community Center. Applications and information about the specific types of apartments and current rates are available on the web at: www.housing.und.edu or contact the Housing Office, University of North Dakota, Box 9029, Grand Forks, ND 58202-9029, (701) 777-4251. Early application is encouraged. Assignments are made in accordance with the established priority system which is determined by the date of receipt of the application fee and deposit.

Single Student Housing

The University maintains furnished and unfurnished apartments and sleeping rooms for single students. Leaseholders must be senior, graduate level, or 23 years of age or older. Rental rates on these units ranged from $277-$499 for the 2002-03 academic year. In most cases, the rent includes heat, water, garbage removal, and basic cable TV (electricity and phone not included). DSL (Digital Subscriber Line) which gives residents access to the University computer network, is available for a fee.

Family Student Housing

The University reserves several hundred apartments for families. These apartments are located on the west side of the campus and include one, two, and three bedroom units. Rental on these units ranged from $277-$579 for the 2002-03 academic year. In most cases, the rent includes heat, water, garbage removal, and basic cable TV (electricity and phone not included). DSL (Digital Subscriber Line) which gives residents access to the University computer network, is available for a fee.

Faculty Housing

Faculty/staff housing is a service provided by the University of North Dakota to ease the transition for new employees to the University and the Grand Forks community. To qualify for a faculty assignment, individuals must have a commitment from the Dean of their college for one of that college’s annual faculty housing allocations.

Off-Campus Housing

Students who wish to live off campus must contract for such facilities themselves.

SPEECH, LANGUAGE AND HEARING CLINIC

Montgomery Hall

Phone (701) 777-3232

The Department of Communication Disorders offers clinical evaluations and treatment for speech, language, and hearing disorders. These services are provided by faculty or by graduate and undergraduate students under the supervision of certified Speech-Language Pathologists and Audiologists. The program in Speech-Language Pathology is accredited by the Council on Academic Accreditation of the American Speech-Language-Hearing Association.

The Speech, Language and Hearing clinic conducts a program of on-going evaluation and therapy on an outpatient basis. Moderate fees are charged for this service. Some of the specific services provided are evaluations of all types of speech handicaps, language disabilities, and hearing problems and evaluations for hearing aid candidacy. Treatment is also provided in all of these areas.

Referrals to the clinic can be made by anyone for individuals of any age. Those who wish evaluations, consultations, or training can make appointments by calling the Speech, Language and Hearing Clinic.

STUDENT ACADEMIC SERVICES

Room 201, Memorial Union

Phone (701) 777-2117

Student Academic Services assists deciding freshmen and transfer students in the development and implementation of their educational plans and goals.

Professional academic advisors assist students in exploring their educational and career goals as well as provide ongoing academic and personal support. Student Academic Services coordinates the
initial registration for all new freshmen through a summer program called Getting Started. The Keep Going program is designed to assist students in a smooth transition from fall to spring semester.

By providing quality academic advising for all students deciding on a major, the staff within Student Academic Services is committed to offering the tools necessary for student success at the University.

**STUDENT AND OUTREACH SERVICES, DIVISION OF**

*307 Twamley Hall*

*Phone (701) 777-2724*

Under the direction of the Vice President for Student and Outreach Services, a number of services, programs, and activities are available to assist students. Students seeking assistance or information should contact the appropriate office as described in the various items in this section of this catalog, or may contact the office of the Vice President for Student and Outreach Services, 307 Twamley Hall, phone 777-2724.

The Division of Student and Outreach Services, in support of the mission of the University of North Dakota, provides leadership by offering diverse student support services and educational opportunities designed to enhance the overall development of multicultural lifelong learners, and by communicating and extending University resources to local, state, national, and international constituents.

**STUDENT FINANCIAL AID OFFICE**

*216 Twamley Hall*

*Phone (701) 777-3121*

*http://sfa@mail.und.nodak.edu*

The Student Financial Aid Office assists students and their families in meeting the costs of higher education by providing students with financial assistance and by providing families with access to options and information on financial planning to help students achieve their educational goals. The philosophy of the Student Financial Aid Office is that the primary responsibility for financing a college education lies with the student and their family. The financial aid offered by the University is viewed only as a supplement to the family support. The amount of the student’s financial need is based on the difference between the cost of education for the school year and a contribution calculated from the family’s total financial resources.

Financial assistance is available to assist students with temporary emergencies as well as to provide long term funds for financing a college education. Students are offered financial assistance in various forms, including scholarships, grants, employment, and loan programs. The Student Financial Aid Office maintains a listing of both on- and off-campus part-time jobs. More information on programs and procedures are available from the Student Financial Aid Office and in the Student Financial Aid section.

**STUDENT HEALTH SERVICE**

*100 McCannel Hall*

*Phone (701) 777-4500*

Student Health Services is a full-service medical clinic located in the heart of campus. It is staffed by licensed physicians and other professional staff and provides medical evaluations, treatment, laboratory, x-ray and pharmacy services, and health education/promotion programs. It is designed to meet the health needs of all enrolled students. Students are not billed for office calls, which are covered by the student fees paid each semester. The student will be charged for laboratory and x-ray services, medications, and for special examinations including, but not limited to, FAA medicals and pre-employment physicals. All charges are billed through the University Business Office; however, insurance claims will be filed for those who present an insurance card. Pharmacy claims will also be filed for participating insurance plans. Spouses of enrolled students may also use the Health Service for a per-semester fee.

Office hours are Monday through Friday, 8 a.m. to 4:30 p.m. by appointment. To make an appointment call 777-2605.

Medical services for children of enrolled students are available through the UND Family Practice Center. Call 777-0800 for appointments. They must be informed that you are a UND student to give your child a special rate.

**SUBSTANCE ABUSE PREVENTION, OFFICE OF**

*Counseling Center*

*200 McCannel Hall*

*Phone (701) 777-2127*

*A.D.A.P.T. (701) 777-4165*

The Office of Substance Abuse Prevention is actively involved in developing, implementing, and presenting workshops and programs which help students make responsible, positive decisions regarding addictive and other high risk behaviors. In addition, information and assistance is provided to students who have questions or concerns about alcohol or other drug use, co-dependent behavior, adult children of alcoholics experiences, or other addictive tendencies. The Alcohol and Drug Abuse Prevention Team (A.D.A.P.T.), staffed by Peer Educators, offers a variety of wellness related presentations which increase awareness of how alcohol and other drugs affect attitudes, decisions, relationships, and the university environment. For students needing alcohol and/or drug evaluations (self or court referred) the Office is a licensed facility which employs a Licensed Addiction Counselor.

**TELEVISION CENTER**

*Rural Technology Center*

*Phone (701) 777-4346*

*Fax (701) 777-4342*

Mission: The University of North Dakota Television Center is a division of UND Continuing Education. The mission is to promote student development, offer quality production services, and provide programming that reflects the university’s mission and values. The following vision statements support the mission:

- Provide a quality internship program through Studio One.
- Support broadcast courses offered through the School of Communication.
- Provide high quality, innovative, and cost-effective production services to clients.
- Schedule and operate Grand Forks Cable Channel 3 and UND Cable Channel 17, Residence Life Cinema.
- Develop partnerships that will enhance the university through the use of television.

Services: The Television Center provides television production services to campus departments and organizations. Hourly rates are charged for services. To request services, contact the Television Center at 777-4346. The following services are offered:

- Studio Production: four-camera production with computer graphics and digital effects.
- Remote Production: one-camera production with special lighting effects.
- Editing: post-production services with computer graphics system, digital video effects, narration and music library.
- Script development: research and writing services for documentary, promotional and news projects.
- Web design: development and maintenance of web sites.
The Television Center does not rent or loan equipment to groups, organizations or individuals. The Television Center does not rent or loan equipment to groups, organizations or individuals. The Television Center does not rent or loan equipment to groups, organizations or individuals.

**TRIO PROGRAMS**

Student Support Services
Ronald E. McNair Program
3rd Floor, McCannel

The UND components of TRIO programs are funded by the United States Department of Education. Two are of interest to the UND student.

Student Support Services. (701) 777-3426. The Student Support Services program provides academic and personal support to first generation (neither parent has earned a bachelor’s degree) and economically disadvantaged students. The program provides academic assistance with individual and small group tutoring; review classes in math, science, and English; course selection and registration; and career exploration. Students also receive assistance securing appropriate financial resources. A variety of resources are available for students as they develop self-reliance, independence, and academic success.

Ronald E. McNair Program. (701) 777-4931. This program is designed for undergraduates who have completed their sophomore year and who are first generation and low income, or who are from a group underrepresented at the doctoral level of the targeted department. The McNair Program encourages graduate studies by providing opportunities to define goals, engage in research, and to develop the skills and student/faculty mentor relationships vital to success at the doctoral level.

**TRIPS OFF CAMPUS**

Representatives of student organizations are allowed to be absent from classes for approved trips and activities. Each student must make satisfactory arrangements with his or her instructors, before the event if possible. No off-campus activities or performances by student organizations are permitted during the period of semester examinations.

**UNIVERSITY RELATIONS, OFFICE OF**

411 Twamley Hall
Phone (701) 777-2731

As the institution’s central communication and public relations department, the Office of University Relations (OUR) generates awareness, understanding and support among the University’s many constituencies. Reporting directly to the President, OUR also maintains liaison with other units performing communications-related tasks, including affiliated but legally independent organizations such as the UND Alumni Association. University Relations has been given responsibility for encouraging an integrated marketing communication approach across the campus. The office also manages UND’s principal home page on the World Wide Web at: http://www.und.edu.

The work of the Office of University Relations falls within two broad areas: (1) Projects initiated, funded and carried out directly by OUR, and (2) projects involving partnerships with other UND departments or individuals in which University Relations serves as a central source of communications, creative and/or organizational expertise.

In conducting projects and campaigns, OUR utilizes a variety of communication methods to reach the general public and special constituencies such as faculty, staff, students, alumni, the local community, educators, government officials, and business leaders. Among these tools are mass media publicity, advertising, OUR-produced periodicals such as the “University Letter” and “UND Dimensions,” brochures and other printed materials, speeches and presentations, special events, direct mail, and personal contact.

Faculty, staff and students are encouraged to contact University Relations on matters that appear to come within the OUR mission. When help cannot be provided for reasons of time, budget or policy, a referral is generally made to another source of assistance.

**VETERAN SERVICES**

211 Twamley Hall
Phone (701) 777-3363

The Veteran Services Office certifies eligible students and veterans for VA educational benefits and acts as a liaison between the student and the VA. Services also include providing students/veterans with information regarding VA policies and procedures, providing information about the University, and assisting students/veterans in the readjustment and adaptation to the university setting. The office also provides information on financial aid and tutorial assistance. Referrals to other service offices are made as appropriate.

**WOMEN’S CENTER**

305 Hamline Street
Phone (701) 777-4300
Fax (701) 777-2307
undwomenscenter@und.nodak.edu
http://www.und.nodak.edu/dept/womenctr

The Women’s Center at the University of North Dakota provides a safe, respectful, and supportive environment for students, faculty, and staff. The Center’s role is to celebrate the diversity of people and thought and to advocate for positive personal and societal changes which serve to promote healthier lifestyles for all people. Ongoing programs include “Meet & Eat” (discussion-based programs), Self-Defense classes, and numerous outreach programs. Information and specific dates and times of scheduled events can be obtained by contacting the Women’s Center. Conferences and programs relative to celebrating the lives of women are held periodically throughout the academic school year. A lending library, resource room, and computer/study area are available for students. The Women’s Center is open Monday through Friday from 8:00 a.m. to 4:30 p.m.
The University Writing Program is designed to encourage and support student and faculty involvement with writing, both as a means of communication and as a mode of learning across the curriculum.

The program sponsors workshops and seminars for faculty in all disciplines, offers free consultation services to students and faculty, and serves as a clearinghouse for information and materials on teaching with writing.

The University Writing Program also assists in the development and support of writing intensive courses designed to fulfill the general education Communication requirement.

The Writing Center offers free individualized help with writing to students and other members of the UND community. Trained consultants will work with writers at any stage in the writing process, including research, organization, revision, editing, and documentation. Handbooks and style manuals are available for those who have questions about grammar, punctuation, or format (APA, MLA, Chicago Manual of Style, Turabian, and others).

The Writing Center is open daily, including some weekend and evening times. Sessions are offered on a drop-in basis (as available) or by appointment. For further information, call 777-2795.
INFORMATION SOURCES
about the
University of North Dakota
Grand Forks, North Dakota

Freshman Student Applications and Undergraduate Transfer Student Applications

Write: Enrollment Services, P.O. Box 8135
       Grand Forks, ND 58202-8135

ONLINE: www.go.und.edu

Telephone: (701) 777-4463
           (800) CALL UND, ext. 4463
           (701) 777-3367 TTY Service Only

Graduate Student Applications

Write: Graduate School, P.O. Box 8178
       Grand Forks, ND 58202-8178

ONLINE: www.und.edu/dept/grad/admissns.html

Telephone: (701) 777-2945
           (800) CALL UND, ext. 2945
           (701) 777-2947 TTY Service Only

Visit and Tour Arrangements

Write: Enrollment Services, P.O. Box 8135
       Grand Forks, ND 58202-8135

Telephone: (701) 777-4463
           (800) CALL-UND, ext. 4463
           (701) 777-3367 TTY Service Only

Internet Home Page
http://www.und.edu

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New Undergraduate Student Information

ENROLLMENT INFORMATION ABOUT UND

The following pages of the catalog contain information about admission policies, costs, student financial aid, and housing. The Office of Enrollment Services serves as the central contact point for enrollment information about the University. It provides information to prospective students through printed materials, visitations to schools and college fairs, tours of the UND campus, and personal contact over the telephone, by email or on a face-to-face basis. The application form for admission and housing may be obtained from the Enrollment Services Office. The mailing address is: Enrollment Services Office, Box 8135 University Station, University of North Dakota, Grand Forks, ND 58202. The office telephone number is 701/777-4157. The application form can also be obtained on the website www.und.edu. As a general rule, the sooner one makes application, the better, especially if the prospective student wishes to receive the highest priority for financial aid and/or housing.

ADMISSION OF STUDENTS

Undergraduates may be admitted to the University in one of four categories: Regular Admission (full-time or part-time); Transient Admission; Undergraduate Non-Degree Admission; or Audit Admission. See below for definitions of these admission categories. For provisions governing admission to the Law School and medical studies in the Medical School, applicants should consult the respective bulletins of those schools.

Types of Admission

Regular Admission is granted to a student who has entirely satisfied the entrance requirements and is duly enrolled as a candidate for a degree. A student whose entrance units are satisfactory is classified as follows, provided he or she has the hours of credit indicated: a freshman, less than 24 hours; a sophomore, 24 hours; a junior, 60 hours; a senior, 90 hours.

Transient Admission. A transient student is one who is in good standing at another college or university and who enrolls at the University for a summer session or one semester only and plans to transfer the credits earned to apply toward a degree at the other institution. Transient students do not qualify for financial aid. Credit earned as a transient student may be applied toward a UND degree if the student qualifies for Regular Admission.

Undergraduate Non-Degree Admission. Students who defer Regular Admission while they enroll in a course(s) for purposes other than the completion of a degree may enroll as Undergraduate Non-Degree students. Students enrolling with this status are not eligible for federal financial aid and may not exceed a total of 12 semester hours of credit as Undergraduate Non-Degree students. Enrollment in courses beyond 12 semester credits will be contingent upon Regular Admission after satisfying all entrance requirements.

Audit Admission. Students who plan only to enroll in University classes as auditors will be admitted as auditors and have a status and responsibility in class distinctly different from that of those taking the course for credit. Students wishing to enroll in University classes as auditors must seek and receive the prior consent of the instructor concerned. Anyone enrolling without such consent may be cancelled from the class by the instructor. An auditor is not required to participate in the oral or written work of the class. He or she takes no examinations and receives no credit for the course. He or she is identified to the instructor concerned as an auditor on the official class list. An auditor may not later establish credit in that course by taking a special examination. The course must be repeated as UND institutional credit to earn credit. While a student cannot fail an audit, an instructor may file a “W” (withdrawn) for non-attendance.

Admission of New Freshmen

Students applying for admission to UND are required to take one of the standardizd college entrance exams. The American College Test (ACT) or SAT I: Reasoning Test is accepted. Standardized test scores at UND are used for scholarships and advisement, as well as admission criterion. Students 25 years old or older are not required to have test scores. It is recommended that students take the ACT late in their junior year or early in their senior year.

All students who graduate from high school, whether in North Dakota or in any other state, in 1993 or later are required to complete a core curriculum before entering any four-year North Dakota University System Institution.

Below is the list of courses at the secondary level which are required for admission:

- Four units of English, including the development of written and oral skills;
- Three units of mathematics, including Algebra 1 and above;
- Three units of laboratory science, including at least one unit each in two or more of the following courses: biology, chemistry, physics or physical science;
- Three units of social studies, excluding consumer education, cooperative marketing, orientation to social science and marriage and family.

Each university may admit some students who have not completed the required courses. The Student Academics Standards Committee will consider exemptions to the policy because of special circumstances.

The Student Academics Standards Committee may deny applicants who meet the core curriculum requirements but are evaluated to be high risk candidates for success at UND due to a low ACT composite score or a low SAT combined score, and/or a low high school grade point average. The class load of any freshman who ranks in the lower half of his or her high school class may be restricted to 12 semester credits.

Students who have not had the required courses are encouraged to enroll in any of North Dakota’s two-year colleges, which include Bismarck State College, North Dakota State College of Science, Minot State University–Bottineau, Lake Region State College, and Williston State College. Upon successful completion of 24 transferable semester credits at these campuses, students are eligible for transfer to a four-year campus. These transfer students are exempt from the high school course requirements.

A student who has not graduated from high school may be admitted to the University by completing the test of General Educational Development (GED) with a minimum score of 400 or above on each exam and an overall average of 500 on the entire test. For more information regarding GED test content and registration, contact UND Testing Services at (701) 777-4157.

The University is approved under Federal law to admit non-immigrant alien students. Students whose education has been outside the United States should make early contact with the Office of Admissions to acquire the international student application form.
International students applying for undergraduate admission and all students whose first language is not English are required to earn a score of at least 525 on the Test of English as a Foreign Language to be considered for admission. TOEFL computerized tests completed after June 1998 require a minimum score of 195. The International Programs Office provides assistance and counseling to students from countries other than the United States. International students should write to the International Program Director as well as to the Office of Admissions.

Canadian students are required to complete Grade XII and to meet high school core curriculum admission requirements. They must also complete the ACT or SAT and request that the official results be sent to UND to be eligible to enter the University as freshmen.

High school special students who are currently attending high school may be allowed to enroll in University courses as special students with permission of the Director of Admissions and the student’s high school principal and counselor. A high school transcript is required along with a letter of recommendation from the high school principal or guidance counselor. Students may receive credit for courses taken at an accredited university/college while in high school if those courses are acceptable for credit at the University of North Dakota. Courses which would apply toward College requirements must be approved by the Dean of the College. Courses to be applied to meet major requirements must be approved by the Departmental Chair. Dual credit applications are available at the high school or NDUS.

Admission Tests: It is required that each applicant for admission who completes the American College Test (ACT) request that official scores be sent directly from ACT in Iowa City to the University. Students who complete the SAT I: Reasoning Test (SAT) may request official test scores be mailed to the Office of Admissions from SAT in Princeton, NJ. The University prefers the ACT report since it provides information, in addition to test results, which is helpful in counseling students. It is to the student’s advantage to take the test at the earliest possible test date during the senior year or the latter part of the junior year. Test scores are required for admission, as well as for evaluating applications for loans and scholarships.

Information on test dates may be secured from the high school principal, counselor, or the Counseling Center at UND or any of the colleges in the state.

Advanced Placement: A student from a high school which offers college-level courses through the College Entrance Examination Board Advanced Placement Program may be given University credit and/or advanced standing in individual subjects. This may be especially desirable if he or she wishes to proceed to the next higher level. Under this plan the student takes an advanced placement examination given at his or her school by the College Board. These examinations are scored by the College Board and are forwarded to the college of the student’s choice. The amount of credit given will then be determined by the department best qualified to evaluate the material. Students with special preparation in academic areas (foreign language, etc.) are urged to take advantage of the Special Examinations for credit available in selective disciplines. See the Special Examinations for Credit section.

International Baccalaureate Diploma: The International Baccalaureate Diploma is recognized for the purpose of admission to the University of North Dakota. Specific course credit for advanced standing will be evaluated and determined by the department and college in which the course is offered.

Note to students intending to enroll in mathematics courses: Students planning to take entry-level mathematics courses at UND (Math 102*, 103, 104, 105, 146, 165, 208) shall be enrolled in their beginning mathematics courses only after taking a math placement test or receiving a sufficiently high score on the ACT Mathematics test. Students who have received college mathematics credit need not take the placement exam. UND’s Mathematics Department strongly advises all transfer students who plan to take courses in or major in math, to take UND’s Math Placement Exam and to consult with their adviser at UND to help determine the best starting point in UND’s math curriculum.

The mathematics placement tests are used for placement purposes only. Passing these tests does NOT grant credit. Credit for Math 103 and/or Math 105 without taking the course(s) is available only through CLEP examinations. Two placement exams are used. Students planning to take Calculus I (Math 165) should take the Trigonometry and Elementary Functions Exam. All other students should take the Algebra Exam. Placement test results will determine beginning placement in Intermediate Algebra (Math 102*), College Algebra (Math 103), Finite Math (Math 104), Trigonometry (Math 105), Calculus I (Math 146), Discrete Mathematics (Math 208), Calculus I (Math 165) or Math for Elementary School Teachers (Math 277). Ask your advisor, or contact the mathematics department, concerning time and place of these tests. *Math 102 credit does not count toward graduation.

Credit by Examination Through CLEP. CLEP stands for College-Level Examination Program of the College Board. It is a national program that offers the opportunity for a student to obtain recognition for college-level achievement based on intensive reading in a particular field, adult school courses, correspondence courses, television or radio courses, courses on tape, or other means of formal or informal preparation. UND accepts credit on CLEP subject examinations only. See the section on CLEP for additional information.

Enrollment in the University: All students will be enrolled, based on their declared major, in one of UND’s academic colleges. Students who have an "undecided" major will receive assistance from the Office of Student Academic Services. Once a student declares a major, he/she will be enrolled in the appropriate academic college. Enrollment in an academic college does not guarantee admission to the college or specific academic programs. (For more information regarding additional requirements for admission to colleges and programs, see the listings for individual colleges).

How to Apply: 1. The Application for Admission form may be obtained from The Office of Enrollment Services, Box 8135 University Station, University of North Dakota, Grand Forks, ND 58202 or on the web at www.und.edu.

2. All applicants are required to complete and return the application for admission to the Office of Admissions with the $35 non-refundable application fee. In addition, beginning freshmen must request their high school to send an official transcript of their records directly to the Office of Admissions.

3. The freshman applicant is required to take the ACT or SAT early in the senior year or the latter part of the junior year and request that the official scores be sent to the University of North Dakota, Grand Forks, ND 58202.

4. Each applicant must have the Measles/Rubella Form completed by his or her family physician or mailed from his/her high school. This form is mailed to each accepted student and should be returned to the Student Health Service before enrollment.

When to Apply: 1. An applicant currently enrolled in high school may apply at any time during his or her senior year. If the student’s high school record to that time is satisfactory, the applicant will be granted admission. It is the student’s responsibility to make certain that a transcript verifying completion of the core curriculum and his or her date of high school graduation is sent to the Office of Admissions.
2. The application for admission for the fall semester may be submitted any time during the period between the beginning of the senior year and July 1. Application for spring semester should be submitted no later than December 1 prior to the opening of the spring semester and May 15 for the Summer Session. International students are required to apply for admission for the fall semester by April 1 and for the Spring Semester by October 1.

Provided applicants meet all the admission requirements, completed applications received from applicants after the deadlines may be considered for admission to the University by the Director of Admissions.

**IMPORTANT NOTICE**

Effective for Fall 2005, the following admission criteria will be used for freshmen and transfer students with less than 24 transferable credits.

In order to be admitted to the University of North Dakota, all students must meet the following minimum criteria:

- ACT composite score of 21 or SAT combined score of 990 for North Dakota residents, OR
- ACT composite score of 22 or SAT combined score of 1,030 for residents of states other than North Dakota
- Minimum high school cumulative GPA of 2.50 for all freshman applicants
- Completion of the high school core curriculum* which includes:
  - Four units** of English, including the development of written and oral skill,
  - Three units of mathematics, Algebra I and above
  - Three units of laboratory science
  - Three units of social studies

The Student Academics Standards Committee will consider applicants who have not met the minimum admission criteria.

*All students who graduate from high school, whether in North Dakota or any other state, in 1993 or later are required to complete a core curriculum before entering the University of North Dakota.

**A unit is equal to one year.

Undergraduate Academic Information

**ADMISSION OF TRANSFER STUDENTS**

Transfer students from other colleges and universities who have earned fewer than 60 semester hours of credit that are acceptable for full credit toward a bachelor’s degree must request that their high school records verifying high school graduation as well as official transcripts of their records at each institution attended be sent directly from the schools and colleges to the Office of Admissions.

Official ACT or SAT results are required for students who will not have 24 acceptable transfer credits and are under the age of 25.

Students who have declared a major will enroll in one of UND’s undergraduate degree-granting colleges. These are the College of Arts and Sciences, the College of Business and Public Administration, the College of Education and Human Development, the School of Engineering and Mines, the John D. Odegard School of Aerospace Sciences, the College of Nursing, and the School of Medicine and Health Sciences. For information on admission requirements and grade point average requirements of UND’s colleges and schools, see the specific college section. Transfer students who have an “undecided” major will receive assistance from the Office of Student Academic Services.

Applicants who have been enrolled in a college or university other than the University of North Dakota and who are applying for admission must submit complete credentials to the Office of Admissions before any information regarding their status will be given. All claims for transfer credit must be made within the semester in which the student matriculates. The Office of the University Registrar evaluates and records transfer credit. Students with unsatisfactory records, as well as students who have been asked to withdraw from other institutions due to unsatisfactory scholarship or behavior, ordinarily will not be allowed to enter the University. If special permission for admission is granted, the student is placed on academic probation.

**International Student Transfer Admission.** International students applying for transfer admission must submit an application for admission, a certification of finances form, and official transcripts/academic records from all post-secondary schools attended. In addition, the Test of English as a Foreign Language (TOEFL), with a score of 525 for undergraduate students, is required for all students whose native language is not English. TOEFL computerized tests completed after June, 1998 require a minimum score of 195.

If transferring from a college or university outside of the United States, a course-by-course evaluation of non-U.S. post-secondary credentials is required. The evaluation form may be obtained from the Admissions Office, the International Programs Office, or at: http://www.wes.org. The form must be submitted with official transcripts/academic records from all post-secondary schools attended, along with word-for-word English translations.

If transferring from a college or university within the United States, a foreign student advisor reference form is required.

**Eligibility.** A transfer student must be in good academic standing and be eligible to return to any college or university attended. The transfer student is not at liberty to disregard any part of his or her previous college record. Former students of other institutions may not enter as new freshmen on the basis of secondary school records. A certification of finances form, and official transcripts/academic records from all post-secondary schools attended, along with word-for-word English translations, must be submitted with the application for admission.

Students transferring to the University must have maintained at least a “C” average at the colleges or universities which they previously attended. Some colleges in the University require higher averages in selected major programs. These requirements are described in the specific college listing in this catalog.

**Transfer Credit.** An official transcript from each of the student’s former institutions must be submitted for review. Upon receipt of the student’s transcripts, the Office of the Registrar will determine which credits will transfer as well as how those credits will be applied toward the University of North Dakota’s General Education Requirements. How the accepted courses may be used toward the student’s major is determined by the individual college or department from which the student plans to receive his/her degree. Students should read specific information about their school or college requirements in their catalog and should contact an adviser in their major to determine course applicability.

A credit summary, indicating only the number of credits transferred, institution of origin, and the student’s transfer GPA, will be posted to the student’s University of North Dakota transcript after the student has been admitted to the University. A detailed listing of transferred courses will be available to both student and adviser. All of the student’s previous undergraduate work becomes part of the student’s permanent UND record. All transfer work shown on the student’s official transcript will be summarized in semester credits. Work transferred from institutions that use quarter or other systems, will be converted to semester credits.

The University of North Dakota participates in the General Education Requirements Transfer Agreement (GERTA) with other North Dakota institutions. Students who have completed their general education requirements at another North Dakota institution recognized by GERTA should request proof of this completion be sent to the UND Office of the Registrar. Students who have completed an Associate of Arts degree or who have completed their general education
requirements at another North Dakota University System (NDUS) institution will be deemed to have completed the general education requirements at UND.

In general, all college-level credit attempted, excluding withdrawals, at a regionally accredited institution of higher education will be posted in transfer by UND. There are certain exceptions to this rule, and those exceptions include, but may not be limited to, the following:

1. Remedial or preparatory courses
2. Credit granted for life experience by other institutions
3. Institution-based credit by examination
4. Non-degree continuing education courses

Credit for military courses and training may be granted, but students requesting this credit must produce an official training record. Students should consult the military branch under which they served to have an official copy of this record sent to UND. The American Council on Education’s (ACE) Guide to the Evaluation of Educational Experiences in the Armed Forces will be used to determine whether or not credit is granted and only credit listed as either lower division baccalaureate or upper division baccalaureate credit will be considered.

Students transferring college credit from all institutions outside the United States, with the exception of Canadian institutions, must have their transcripts evaluated by an international transcript evaluation company prior to being admitted to UND. Students who need more information about how this evaluation is performed may go online at: http://www.wes.org. Canadian students’ work will be evaluated on-site in the Office of the Registrar.

Credits not successfully completed (grades of F) that would transfer if successfully completed will also transfer to the University and will affect the students’ cumulative grade point average. Transfer students from two-year colleges (junior or community colleges) are required to complete a minimum of 60 semester hours at a four-year college. The last 30 credits toward the degree must be institutional credit at the University of North Dakota.

To qualify for a degree a student must achieve a minimum 2.00 (C) average on all University work. For transfer students, it is required that the overall average (including transfer work) be 2.00 (C) and that the average of work taken at the University of North Dakota be 2.00 (C). Some colleges require a higher grade point average for graduation and this requirement is indicated in the specific college description in this catalog.

How To Apply: 1. Transfer students should request an Application for Admission from the Enrollment Services Office, Box 8135 University Station, University of North Dakota, Grand Forks, ND 58202, or on the web at: http://www.und.edu.
2. Students must complete the application and return it to the Office of Admissions together with a $35 non-refundable fee.
3. Students must request that an official transcript from each college attended be forwarded directly to the Office of Admissions, Box 8357, University of North Dakota, Grand Forks, ND 58202. Although an applicant’s records from several institutions may be summarized on one transcript, an application will not be considered until official transcripts from each college attended are received. These are required even though no credit may have been earned at an institution. An official high school transcript mailed to the Office of Admissions directly from the high school is required for all students who have earned fewer than 60 semester credits accepted toward a baccalaureate degree and official ACT or SAT results are required for students allowed less than 24 semester credits in transfer to a degree program.

When to Apply: 1. A transfer applicant may submit an application as soon as he or she has registered for the last term which he or she intends to complete at his or her former school. Students from other colleges who are accepted for admission to the University will receive information about early registration during which time they may come to the University for advice about their schedule and may enroll for the first semester courses.
2. A student should submit an application no later than July 1 prior to the opening of the first semester in the year for which admission is sought. Application for second semester should be submitted no later than December 1 prior to the opening of the second semester. Application for Summer Session should be submitted by May 15. International students must apply by April 1 for the fall semester and October 1 for the spring semester.

Providing applicants meet all the admission requirements, completed applications received from applicants after the deadlines for the academic year, may be considered for admission to the University by the Director of Admissions and the Dean of the student’s college.

READMISSION OF FORMER UNDERGRADUATE STUDENTS

Undergraduate students who leave the University for at least one complete semester (excluding summer terms) are required to submit an application for readmission to the Office of the Registrar. (Returning graduate students should refer to the Graduate section of this catalog.) Readmission to the University does not guarantee readmission to a particular degree program at UND. The Request for Readmission form is available from the UND Office of the Registrar web site or upon request from the Office of the Registrar. Students who were previously dismissed from the University must be reinstated by the dean of the school or college to which they wish to be admitted before applying for readmission.

Students who have enrolled in courses from other institutions during their time away from UND must have official transcripts sent from each institution attended. Failure to declare attendance at another institution is cause for dismissal and may result in cancellation of registration or any earned degrees to be revoked. Students whose institutional and cumulative GPA’s are below 2.00 based on all post-secondary work accepted by the University may be denied readmission or may be readmitted on probation. Students whose GPA is under 2.00 will be allowed readmission to UND only upon the approval of the dean of their prospective school or college.

ORIENTATION PROGRAMS FOR NEW STUDENTS

The University of North Dakota holds orientation programs for new students (freshman and transfer students) each semester. Emphasis is on acquainting students with people, programs and resources at UND and the surrounding community. New students will be informed of the dates, times and specific details.
INTRODUCTION AND BACKGROUND

This section of the catalog summarizes many of the academic policies and procedures which will apply to the student during his or her undergraduate years at UND. Particularly important are the passages describing the University’s general education requirements. Since institutional policies may change between catalog publication dates, students are encouraged to consult with their academic adviser whenever appropriate. Students with questions also should request information from their academic department, the dean’s office of their college, and the various administrative offices on campus.

Before utilizing the information found in this catalog, it may be useful to review the following basic patterns of undergraduate education at the University of North Dakota.

The student’s place in the University organization. New students are admitted, according to the major they wish to pursue, to one of UND’s undergraduate degree granting colleges (e.g., Arts and Sciences). All students who have an “undecided” major will receive assistance from the Office of Student Academic Services. Once a student declares a major they will be enrolled in one of the undergraduate degree granting colleges. Each college is made up of a group of academic departments and/or program areas (e.g., history). Courses in the student’s major will normally be taken in a specific department, although UND offers many interdisciplinary majors as well. It should be noted that course work in one’s major field normally makes up only a fraction of the total credits required for graduation (typically about one-fourth). Thus, throughout their undergraduate days, students have the opportunity to take courses in many departments outside their home college. Indeed, this diversity is one of the advantages of attending a multipurpose university such as UND.

As an institution of higher education, the university is committed to ongoing assessment of student learning at all levels and in all programs. Assessment of student learning is essential in order for the university to improve educational programs and the experiences of students. Students are urged to respond positively when asked to participate in assessment activities. Students are also encouraged to collaborate in the planning and development of assessment activities and to make suggestions for improvements.

University, college and departmental requirements. Undergraduate students must meet three sets of requirements to graduate from the University of North Dakota: (1) University graduation requirements, (2) requirements of the UND college or school granting the student’s degree, and (3) the requirements of the student’s major department or program area.

Which catalog to use. The graduation requirements of the University and its colleges, schools, and departments, as published in the catalog in effect at the beginning of the first semester the student is enrolled at the University, are those which must be met for completion of an undergraduate degree program. Subsequent changes in requirements, as published in the catalog or amended by the University Senate and the Board of Higher Education, may be substituted at the option of the students. The faculty reserves the right to make changes in curricula at any time when in its judgment such changes are for the best interests of the students. Courses listed in this catalog are subject to change through normal academic channels. New courses and changes in existing course work are initiated by the responsible departments or programs and are approved by the appropriate dean and college or school curriculum committee, the University Curriculum Committee, the University Senate, the Vice President for Academic Affairs, and the Board of Higher Education.

Advisement. The University encourages continuing communication between faculty and students to enhance the advisement process. The student has final responsibility to meet the stated requirements for the degree sought, as listed in the appropriate catalog or bulletin. Every student is held accountable for complying with the information contained in this catalog and the Time Schedule of Classes for each term. Registration is the student’s personal responsibility.

DEGREES GRANTED

The University of North Dakota offers both undergraduate and graduate courses of study leading to degrees in many academic disciplines. See the section of undergraduate majors and minors for specific listings. Curricula for specific majors will be found in the Courses of Instruction section of this catalog.

See the section about the Graduate School in this catalog for a description of graduate degrees and a listing of the fields of study open to graduate students. Sections of the graduate professional Schools of Law and Medicine also are included. The two professional schools publish separate bulletins, which are available upon request.

THE PURPOSES OF A UNIVERSITY EDUCATION

UND’s Philosophy of General Education

Before consulting the University-wide graduation requirements, students are urged to read this statement of philosophy prepared by UND’s General Education Requirements Committee. One aspect of the University-wide requirements for a baccalaureate degree is completion of UND’s general education requirements. This statement places the general education requirements into a broader context and indicates the end results which should be striven for in undertaking a university education.

Students are expected to explore a range of content areas and to develop broad learning abilities as they complete their general education requirements at UND. Students’ general education courses should anchor their future university work and provide a model for life-long learning.

By the time students complete their general education courses, they should be able to:

• communicate effectively, both orally and in writing;
• think critically and creatively;
• make informed choices;
• understand how conclusions are reached in the natural sciences, the social sciences, and the arts and humanities;
• acquire knowledge over a broad spectrum of subject areas;
• develop some familiarity with cultures other than their own.

In choosing general education courses, students are encouraged to venture into areas that are new to them. By choosing courses that complement each other, students can reinforce and enhance the knowledge and abilities acquired in each course, as well as develop the ability to recognize relationships.

THE NORTH DAKOTA UNIVERSITY SYSTEM TRANSFER AGREEMENT

The University of North Dakota participates in the General Education Requirements Transfer Agreement (GERTA) with other North Dakota institutions. Students who have completed their general education requirements at another North Dakota institution recognized by GERTA should request proof of this completion be sent to the UND Office of the Registrar. Students who have completed an Asso-
UND coursework generally acceptable at other NDUS schools as general education courses are designated on the list that follows, e.g., ND-ENGL. Please direct questions about the NDUS Transfer Agreement to the UND Registrar’s Office or the Registrar at another NDUS institution.

### UNIVERSITY GRADUATION REQUIREMENTS

A minimum of 125 semester hours of credit is required for a baccalaureate degree. Transfer students are required to complete a minimum of 60 credits at four-year institutions. The last 30 credits must be UND institutional credit. Institutional credit is academic credit awarded by the University. The following pages describe the requirements which must be met by all students seeking the baccalaureate degree. These include the General Education requirements in (I) Communication, (II) Social Sciences, (III) Arts and Humanities, and (IV) Mathematics, Science and Technology, as well as regulations concerning majors, minors, grade point average, upper division courses, and residence. A minimum of three (3) credits of the General Education Requirements must meet the World Cultures designation. Students cannot fulfill the world cultures requirement by taking a CLEP or Foreign Language Placement and credit test.

The philosophy guiding the General Education portion of the University’s graduation requirements (I through IV) is explained in the immediately preceding section of the catalog. (Note: engineering students should pay special attention to General Education requirements at UND.) The General Education requirements may be satisfied by:

1. Successful completion of coursework acceptable for that area, as specified below; or
2. Achievement of the minimum score required for credit in College-Level Examination Program (CLEP) subject examinations.

### I. Communication 9 sem. credits min.

Choose one course from each of the three areas:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Engl 110</td>
<td>College Composition I (ND:ENGL)</td>
<td>3</td>
</tr>
<tr>
<td>(2) Engl 120</td>
<td>College Composition II (ND:ENGL)</td>
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</tr>
<tr>
<td>(3) Engl 125</td>
<td>Technical and Business Writing (ND:ENGL)</td>
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<tr>
<td>(3) ChE 331</td>
<td>Chemical Engineering Lab I</td>
<td>2</td>
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<tr>
<td>(3) ChE 332</td>
<td>Chemical Engineering Lab II</td>
<td>2</td>
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<tr>
<td>(3) ChE 451</td>
<td>Chemical Engineering Lab IV</td>
<td>3</td>
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<tr>
<td>Chin 101</td>
<td>First Year Chinese I</td>
<td>4</td>
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<tr>
<td>Chn 101</td>
<td>First Year Latin I</td>
<td>4</td>
</tr>
<tr>
<td>Chn 151</td>
<td>First Year Greek I</td>
<td>4</td>
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<tr>
<td>CE 303</td>
<td>Civil Engineering Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>EE 481</td>
<td>Senior Design II</td>
<td>3</td>
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<tr>
<td>EE 120</td>
<td>College Composition II (ND: ENGL)</td>
<td>3</td>
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<tr>
<td>Engl 125</td>
<td>Technical and Business Writing (ND:ENGL)</td>
<td>3</td>
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<tr>
<td>Engl 401</td>
<td>Advanced Composition I</td>
<td>3</td>
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<tr>
<td>Fren 101</td>
<td>First Year French I</td>
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<tr>
<td>Gerl 421</td>
<td>Seminar I</td>
<td>1</td>
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<tr>
<td>Gerl 422</td>
<td>Seminar II</td>
<td>1</td>
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<tr>
<td>Gerl 494</td>
<td>Senior Thesis</td>
<td>1</td>
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<tr>
<td>Germ 101</td>
<td>First Year German I</td>
<td>4</td>
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<tr>
<td>Hist 240</td>
<td>The Historian’s Craft</td>
<td>3</td>
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<tr>
<td>IS 240</td>
<td>Research and Writing in Indian Studies</td>
<td>3</td>
</tr>
<tr>
<td>ME 480</td>
<td>Mechanical Engineering Seminar</td>
<td>3</td>
</tr>
<tr>
<td>Musc 490</td>
<td>Seminar in Music</td>
<td>3</td>
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</tbody>
</table>

### II. Social Sciences 9 sem. hours min. (must be taken in a minimum of 2 departments)

<table>
<thead>
<tr>
<th>Department</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropology</td>
<td>+Anth 100 Introduction to Anthropology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>+Anth 171 Introduction to Cultural Anthropology (ND:SS)</td>
<td>3</td>
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<tr>
<td></td>
<td>+Anth 172 Introduction to Archaeology and World History (ND:SS)</td>
<td>3</td>
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<tr>
<td></td>
<td>Anth 370 Language and Culture</td>
<td>3</td>
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<tr>
<td></td>
<td>Anth 371 Cultural Dynamics</td>
<td>3</td>
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<tr>
<td></td>
<td>Anth 374 Old World Prehistory</td>
<td>3</td>
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<tr>
<td></td>
<td>Anth 377 North American Archaeology</td>
<td>3</td>
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<tr>
<td></td>
<td>+Anth 379 Culture Area Studies (ND:SS)</td>
<td>3</td>
</tr>
<tr>
<td>Arts and Sciences</td>
<td>AdS 225 Introduction to the Study of Women</td>
<td>3</td>
</tr>
<tr>
<td>Business Administration</td>
<td>BAdm 101 Introduction to Business (ND:SS)</td>
<td>3</td>
</tr>
<tr>
<td>Communication</td>
<td>Comm 102 Communication and the Human Community</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Comm 103 Information Technology and Social Change</td>
<td>3</td>
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<tr>
<td></td>
<td>Comm 300 Communication and Society</td>
<td>3</td>
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<tr>
<td>Communication Sciences &amp; Disorders</td>
<td>CSD 232 Survey of Communication Disorders (ND:SS)</td>
<td>3</td>
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<td></td>
<td>CSD 365 Aging and Communication</td>
<td>3</td>
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<tr>
<td>Criminal Justice Studies</td>
<td>C3 201 Introduction to Criminal Justice (ND:SS)</td>
<td>3</td>
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<tr>
<td>Economics</td>
<td>+Econ 105 Elements of Economics (ND:SS)</td>
<td>3</td>
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<tr>
<td></td>
<td>Econ 201 Principles of Microeconomics (ND:SS)</td>
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<tr>
<td></td>
<td>Econ 202 Principles of Macroeconomics (ND:SS)</td>
<td>3</td>
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<tr>
<td>Geography</td>
<td>+Geog 151 Human Geography (ND:SS)</td>
<td>3</td>
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<td></td>
<td>+Geog 161 World Regional Geography (ND:SS)</td>
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<td></td>
<td>Geog 262 Geography of North America I (ND:SS)</td>
<td>3</td>
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<td></td>
<td>Geog 352 Economic Geography (ND:SS)</td>
<td>3</td>
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<td></td>
<td>Geog 354 Conservation of Resources (ND:SS)</td>
<td>3</td>
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<tr>
<td>History</td>
<td>+Hist 101 Western Civilization I (ND:Hist)</td>
<td>3</td>
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<tr>
<td></td>
<td>+Hist 102 Western Civilization II (ND:Hist)</td>
<td>3</td>
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<tr>
<td></td>
<td>Hist 103 United States to 1877 (ND:Hist)</td>
<td>3</td>
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<tr>
<td></td>
<td>Hist 104 United States since 1877 (ND:Hist)</td>
<td>3</td>
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<td></td>
<td>Hist 204 History of Canada since 1867</td>
<td>3</td>
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<td></td>
<td>Hist 205 History of North Dakota (ND:Hist)</td>
<td>3</td>
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<tr>
<td></td>
<td>+Hist 221 The Scandinavian Countries since 1500 (ND:Hist)</td>
<td>3</td>
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<td>+Hist 269 World War II</td>
<td>3</td>
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<td>+Hist 325 The United States: The Early Frontier</td>
<td>3</td>
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<td></td>
<td>+Hist 326 The United States: Western Frontier</td>
<td>3</td>
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<td></td>
<td>+Hist 332 Women in American History</td>
<td>3</td>
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<td></td>
<td>Hist 333 Women in American History Since 1865</td>
<td>3</td>
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<td></td>
<td>+Hist 335 Nuclear Weapons and the Modern Age</td>
<td>3</td>
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<td></td>
<td>+Hist 339 The United States and Vietnam, 1945-75</td>
<td>3</td>
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<td></td>
<td>+Hist 351 Europe: Age of Absolutism, 1648-1789</td>
<td>3</td>
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<td>Hist 407 The United States: Rise of Industrial America, 1877-1917</td>
<td>3</td>
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<tr>
<td></td>
<td>Hist 408 The United States, 1920-1945</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Hist 413 The United States Since 1945</td>
<td>3</td>
</tr>
</tbody>
</table>
### Social Work
- SWK 256 Social Welfare (2)
- SWK 257 Human Behavior in the Social Environment (4)
- SWK 354 Orientation to Gerontology (2)

### Teaching & Learning
- T&L 252 Child Development (3)

### III. Arts and Humanities 9 sem. hours min.

#### (must be taken in a minimum of 2 departments)

##### Art
- **Art 100** Introduction to Sculpture (ND:FA) (3)
- **Art 110** Introduction to the Visual Arts (ND:Hum) (3)
- **Art 120** Introduction to Drawing and Color Materials (ND:FA) (3)
- **Art 122** Two-Dimensional Design (ND:FA) (3)
- **Art 124** Three Dimensional Design (3)
- **Art 130** Drawing I (ND:FA) (3)
- **Art 151** Introduction to Ceramics (3)
- **Art 210** History of Art I (ND:Hum) (3)
- **Art 211** History of Art II (ND:Hum) (3)
- **Art 230** Drawing II (ND:FA) (3)
- **Art 250** Ceramics I (ND:FA) (3)
- **Art 260** Slide Photography (ND:FA) (3)

### Education and Human Development
- EHD 200 Research in the University Library (1)

#### English
- Engl 161 American Indian Languages I (ND:Hum) (3)
- Engl 162 American Indian Languages II (ND:Hum) (3)
- Engl 209 Introduction to Linguistics (ND:Hum) (3)
- Engl 221 Introduction to Drama (ND:Hum) (2)
- Engl 222 Introduction to Poetry (ND:Hum) (2)
- Engl 224 Introduction to Fiction (ND:Hum) (2)
- Engl 225 Introduction to Film (ND:Hum) (2)
- Engl 241 World Literature I (ND:Hum) (3)
- Engl 242 World Literature II (ND:Hum) (3)
- Engl 265 Native American Literature (ND:Hum) (3)
- Engl 301 Survey of English Literature (ND:Hum) (3)
- Engl 302 Survey of English Literature (ND:Hum) (3)
- Engl 303 Survey of American Literature (ND:Hum) (3)
- Engl 304 Survey of American Literature (ND:Hum) (3)
- Engl 305 Creative Writing (ND:Hum) (2)
- Engl 315 Shakespeare (ND:Hum) (3)
- Engl 316 Shakespeare (ND:Hum) (3)
- Engl 357 Women Writers and Readers (ND:Hum) (2-4)
- **Engl 365** Black American Writers (ND:Hum) (3)
- Engl 370 Language and Culture (ND:Hum) (3)

#### Fine Arts
- FA 150 Introduction to Fine Arts (ND:Hum) (3)

#### History
- **Hist 101** Western Civilization I (ND:Hist) (3)
- **Hist 102** Western Civilization II (ND:Hist) (3)
- **Hist 103** United States to 1877 (ND:Hist) (3)
- **Hist 104** United States since 1877 (ND:Hist) (3)
- **Hist 204** History of Canada to 1867 (3)
- **Hist 205** History of Canada Since 1867 (3)
- **Hist 220** History of North Dakota (ND:Hist) (3)
- **Hist 221** The Scandinavian Countries since 1500 (ND:Hist) (3)
- **Hist 269** World War II (3)
- **Hist 325** The United States: The Early Frontier (3)
- **Hist 326** The United States: Western Frontier (3)
- **Hist 332** Women in American History (3)
- **Hist 333** Women in American History Since 1865 (3)
- **Hist 335** Nuclear Weapons and the Modern Age (3)
- **Hist 339** The United States and Vietnam, 1945-75 (3)
| **IT 322** Fundamentals of Photography | (2) |
| Languages | |
| Chin 101 First Year Chinese I | (4) |
| Chin 102 First Year Chinese II | (4) |
| Clas 101 First Year Latin I (ND:Hum) | (4) |
| Clas 102 First Year Latin II (ND:Hum) | (4) |
| Clas 151 First Year Greek I (ND:Hum) | (4) |
| Clas 152 First Year Greek II (ND:Hum) | (4) |
| Clas 185 Introduction to Classical Mythology | (3) |
| Clas 201 Second Year Latin I (ND:Hum) | (4) |
| Clas 202 Second Year Latin II (ND:Hum) | (4) |
| Clas 251 Second Year Greek I (ND:Hum) | (4) |
| Clas 252 Second Year Greek II (ND:Hum) | (4) |
| Clas 301 Latin Prose (ND:Hum) | (3) |
| Clas 362 Masterpieces of Latin Literature | (3) |
| Clas 364 Special Topics in Classical Literature | (3) |
| Fren 101 First Year French I (ND:Hum) | (4) |
| Fren 201 Second Year French I (ND:Hum) | (4) |
| Fren 202 Second Year French II (ND:Hum) | (4) |
| Fren 301 Third Year French (ND:Hum) | (3) |
| Fren 302 Third Year French (ND:Hum) | (3) |
| Fren 305 French Conversation and Culture (ND:Hum) | (2) |
| Fren 306 French Conversation and Culture (ND:Hum) | (2) |
| Fren 371 History of French Literature (ND:Hum) | (3) |
| Fren 372 History of French Literature (ND:Hum) | (3) |
| Germ 101 First Year German I (ND:Hum) | (4) |
| Germ 102 First Year German II (ND:Hum) | (4) |
| Germ 201 Second Year German I (ND:Hum) | (4) |
| Germ 202 Second Year German II (ND:Hum) | (4) |
| Germ 312 Topics in German Culture (ND:Hum) | (3) |
| Germ 406 German Literature to Translation | (3) |
| Norw 101 First Year Norwegian I (ND:Hum) | (4) |
| Norw 102 First Year Norwegian II (ND:Hum) | (4) |
| Norw 201 Second Year Norwegian I (ND:Hum) | (4) |
| Norw 202 Second Year Norwegian II (ND:Hum) | (4) |
| Russ 101 First Year Russian I (ND:Hum) | (4) |
| Russ 102 First Year Russian II (ND:Hum) | (4) |
| Russ 161 Short Masterpieces of Russian Literature | (3) |
| Russ 162 Introduction to Russian Culture | (3) |

| Russ 201 Second Year Russian I (ND:Hum) | (4) |
| Russ 202 Second Year Russian II (ND:Hum) | (4) |
| Russ 301 Third Year Russian I (ND:Hum) | (3) |
| Russ 302 Third Year Russian II (ND:Hum) | (3) |
| Span 101 First Year Spanish I (ND:Hum) | (4) |
| Span 102 First Year Spanish II (ND:Hum) | (4) |
| Span 201 Second Year Spanish I (ND:Hum) | (4) |
| Span 202 Second Year Spanish II (ND:Hum) | (4) |

**Music**

| **Musc 100** Introduction to the Understanding of Music (ND:Hum) | (3) |
| **Musc 101** Fundamentals of Music (ND:Hum) | (3) |
| **Musc 153** Individual Lessons for Non-Majors (ND:FA) | (1) |
| **Musc 200** Music in America | (3) |
| **Musc 203** Popular and Classical Music of the World (ND:Hum) | (3) |
| **Musc 260** Concert Choir (ND:FA) | (1) |
| **Musc 261** University Chamber Chorale (ND:FA) | (1) |
| **Musc 263** Varisty Band (ND:FA) | (1) |
| **Musc 264** Women’s Chorus (ND:FA) | (1) |
| **Musc 270** Wind Ensemble (ND:FA) | (1) |
| **Musc 271** University Band (ND:FA) | (1) |
| **Musc 272** Marching Band (ND:FA) | (1) |
| **Musc 273** Instrumental Jazz Ensemble (ND:FA) | (1) |
| **Musc 274** Symphony Orchestra (ND:FA) | (1) |
| **Musc 276** Collegium Musicum (ND:FA) | (1-4) |
| **Musc 279** Chamber Music (ND:FA) | (1) |

**Philosophy**

| Phil 101 Introduction to Philosophy (ND:Hum) | (3) |
| Phil 102 Introduction to Logic | (3) |
| Phil 104 Oriental Philosophy | (3) |
| Phil 200 Classical Greek and Hellenistic Philosophy (ND:Hum) | (3) |
| Phil 302 Renaissance and Enlightenment (ND:Hum) | (3) |
| Phil 303 Kant and the Nineteenth Century (ND:Hum) | (3) |
| Phil 304 Twentieth Century Philosophy (ND:Hum) | (3) |
| Phil 305 American Philosophy (ND:Hum) | (3) |
| Phil 310 Ethics | (3) |
| Phil 320 Metaphysics: What Is Real? (ND:Hum) | (3) |
| Phil 330 Epistemology: What Can We Know and How Can We Know It? (ND:Hum) | (3) |
| Phil 370 Ethics in Engineering and Science (ND:Hum) | (3) |
| Phil 372 Ethics in Health Care (ND:Hum) | (3) |
| Phil 373 Ethics in Business and Public Administration (ND:Hum) | (3) |
| Phil 400 Philosophy of Human Nature (ND:Hum) | (3) |
| Phil 430 Philosophy of Science and Technology (ND:Hum) | (3) |

**Political Science**

| Pols 311 Development of Political Thought I | (3) |
| Pols 312 Development of Political Thought II | (3) |

**Religion**

| Rels 100 Introduction to Religious Inquiry (ND:Hum) | (3) |
| Rels 101 Introduction to Religion (East) (ND:Hum) | (3) |
| Rels 102 Introduction to Religion (West) (ND:Hum) | (3) |
| Rels 116 Women and Religion (ND:Hum) | (3) |
| Rels 120 Religion in America (ND:Hum) | (3) |
| Rels 230 Old Testament (ND:Hum) | (3) |
| Rels 247 Introduction to Judaism (ND:Hum) | (3) |
| Rels 250 East and West in Religion (ND:Hum) | (3) |
| Rels 300 Jews in Gospel and History | (3) |
| Rels 301 Life and Religion of Paul (ND:Hum) | (3) |
### Geology
- Geol 101 Introduction to Geology (ND:LABSC) (3)
- Geol 104 Geology of National Parks (3)
- Geol 105 Selected Topics: Gems and Gemstones (1)
- Geol 105 Selected Topics: Earthquakes, Volcanoes and Natural Disasters (1)
- Geol 105 Selected Topics: Fossils, Evolution, and the Road to Extinction (1)
- Geol 105 Selected Topics: Natural Hazards (1)
- Geol 111 Views of the Earth and Planets (ND:Sci) (3)
- Geol 111R Views: Recitation (1)
- ***Geol 322 Environmental Geology (3)

### Honors
- Hon 103 Inquiry in the Sciences (ND:Sci) (3)
- Hon 293 Colloquium in the Sciences (ND:Sci) (2-4)
- Hon 393 Advanced Colloquium in the Sciences (ND:Sci) (2-4)

### Humanities
- Hum 270 Integrated Studies Life Science (3)
- ***Hum 271 Integrated Studies General Science (with lab) (4)
- **Maximum total of 3 credits from these courses may be counted toward the general education requirement in the Arts and Humanities area.

### IV. Mathematics, Science and Technology  12 sem. hours min. (must be taken in a minimum of 2 departments and must include a 4-hour science course with a lab)

#### Anthropology
- Anth 170 Introduction to Biological Anthropology (3)

#### Atmospheric Sciences
- ***Atsc 110 Meteorology (ND-LABSC) (4)

#### Biology
- ***Biol 111 & 111L Concepts of Biology (with lab) (ND-LABSC) (4)
- Biol 124 Environmental Science (ND:Sci) (2)
- ***Biol 150 & 150L General Biology I (with lab) (ND-LABSC) (4)
- ***Biol 151 & 151L General Biology II (with lab) (ND-LABSC) (4)

#### Chemistry
- ***Chem 110 Survey of Chemistry (ND-LABSC) (4)
- ***Chem 115 & 115L Introductory Chemistry and Laboratory (ND-LABSC) (4)
- ***Chem 116 & 116L Introduction to Organic and Biochemistry and Laboratory (ND-LABSC) (4)
- ***Chem 121 & 121L General Chemistry I and General Chemistry I Laboratory (ND-LABSC) (4)
- ***Chem 122 & 122L General Chemistry II and General Chemistry II Laboratory (ND-LABSC) (4)
- ***Chem 330 Quantitative Analysis (ND-LABSC) (3)

#### Computer Science
- CSci 101/101T Introduction to Computers (ND-COMPSC) (4)
- CSci 120 Computer Programming I (ND-COMPSC) (3)
- CSci 160 Computer Science I (ND-COMPSC) (4)
- CSci 289 Social Implications of Computer Technology (ND-COMPSC) (3)

#### Economics
- Econ 210 Introduction to Business and Economic Statistics (3)

#### Geography
- Geog 121 Physical Geography (3)
- ***Geog 121 & 121L Physical Geography (with lab) (ND-LABSC) (4)
- ***Geog 134 & 134L Intro to Global Climate (with lab) (ND-LABSC) (4)
- Geog 134 & 134L Intro to Global Climate (with lab) (ND-LABSC) (4)

#### Geology
- ***Geol 101 Introduction to Geology (ND-LABSC) (3)
- Geol 101L Introduction to Geology Lab (ND-LABSC) (1)
- ***Geol 102 The Earth Through Time (ND-LABSC) (3)
- Geol 102L The Earth Through Time Lab (ND-LABSC) (1)
- Geol 103 Introduction to Environmental Issues (ND-Sci) (3)
- Geol 104 Geology of National Parks (3)
- Geol 105 Selected Topics: Gems and Gemstones (1)
- Geol 105 Selected Topics: Earthquakes, Volcanoes and Natural Disasters (1)
- Geol 105 Selected Topics: Fossils, Evolution, and the Road to Extinction (1)
- Geol 105 Selected Topics: Natural Hazards (1)
- Geol 111 Views of the Earth and Planets (ND:Sci) (3)
- Geol 111R Views: Recitation (1)
- ***Geol 322 Environmental Geology (3)

#### Honors
- Hon 103 Inquiry in the Sciences (ND:Sci) (3)
- Hon 293 Colloquium in the Sciences (ND:Sci) (2-4)
- Hon 393 Advanced Colloquium in the Sciences (ND:Sci) (2-4)

#### Humanities
- Hum 270 Integrated Studies Life Science (3)
- ***Hum 271 Integrated Studies General Science (with lab) (4)

#### Industrial Technology
- IT 300 Technology and Society (ND:Sci) (3)

#### Mathematics
- Math 103 College Algebra (ND-Math) (3)
- Math 104 Finite Mathematics (ND-Math) (3)
- Math 105 Trigonometry (ND-Math) (2)
- Math 115 Introduction to Mathematical Thought (3)
- Math 146 Applied Calculus I (ND-Math) (3)
- Math 165 Calculus I (ND-Math) (4)
- Math 166 Calculus II (ND-Math) (4)

#### Nutrition and Dietetics
- Nut 240 Fundamentals of Nutrition (3)

#### Philosophy
- Phil 350 Symbolic Logic (3)

#### Physics
- ***Phys 110 & 110L Introductory Astronomy (with lab) (ND-LABSC) (4)
- ***Phys 130 & 130L Natural Science —Physics (4)
- ***Phys 140 Physics for Poets (3)
- ***Phys 150 & 150L Physics for Aerospace Sciences (5)
- ***Phys 161 & 161L Introductory College Physics I (ND-LABSC) (4)
- ***Phys 162 & 162L Introductory College Physics II (ND-LABSC) (4)
- ***Phys 211 & 211L College Physics I (ND-LABSC) (4)
- ***Phys 212 & 212L College Physics II (ND-LABSC) (4)
- ***Phys 251 & 251L University Physics I (ND-LABSC) (4)

#### Psychology
- Psy 241 Introduction to Statistics (4)

#### Sociology
- Soc 326 Sociological Statistics (3)

#### Space Studies
- Spst 200 Introduction to Space Studies (ND:Sci) (3)

#### **Maximum total of 3 credits from these courses may be counted toward the general education requirement in the Arts and Humanities area.

### V. Upper Division Courses Required
A minimum of 36 semester credit hours must be completed in upper division courses by all undergraduate degree recipients. All courses numbered 300 and above are defined as upper division.

### VI. Majors
The specific requirements of a major or related fields concentration are determined by the department or program responsible for the major or concentration subject to approval by the University Curriculum Committee.
Students desiring to have more than one major listed on the transcript must have the written approval of the dean(s) offering the majors.

VII. Minors

Minors shall consist of a minimum of 20 semester hours of course work with the course distribution established by the appropriate department or departments with the approval of the University Curriculum Committee. Minors may consist of courses associated with a department or discipline (e.g., chemistry); a specialty within a department (office administration, etc.) or a collection of courses which cross disciplines (e.g. international studies). A minor is not required by the University but may be required in some programs for an undergraduate degree. A student may declare a minor in the office of the dean of the college in which the minor is offered.

VIII. Double Use of Courses

(1) Courses within a major or required by a program may, at the same time, fulfill General Education Requirements for the University. (There are a few exceptions to this general rule. These exceptions are stated under departmental requirements, for example under the School of Communication.)

(2) Courses may NOT generally be used, however, to count at the same time toward the total credits needed for 2 majors, 2 minors, or a major and a minor.

(3) In certain cases courses may count toward a major (or minor) and, at the same time, fulfill “Extradepartamental Requirements” for another major or program. Consult college or departmental offices for more specific information.

IX. Grade Point Average

To qualify for a degree a student must achieve a minimum 2.00 (C) average on all University work. For transfer students, it is required that the overall average (including transfer work) be 2.00 (C) and that the average work taken at the University of North Dakota be 2.00 (C).

Some undergraduate colleges require higher averages. (See requirements under specific college information.)

X. Residence Requirements

A candidate for the bachelor’s degree who enters with transfer credit must obtain from the University a minimum of 30 semester hours of institutional credit and 60 semester credits from a four-year college. Fifteen semester credits in the student’s major and four semester credits in the minor, if a minor is declared, must be institutional credit. Some colleges of the University may require more than 15 hours of institutional credit in the major. The last 30 credits for the bachelor’s degree ordinarily must be institutional credit.

Exceptions to General Graduation Requirements. Any exception to the above general degree requirements must be requested by the student at least six weeks prior to his or her expected graduation date. Petitions must be initiated in the office of the student’s dean.

Formal Application for the Degree Sought. Candidates for degrees must make written application to the Registrar or to the dean of the college of the degree within the first four weeks of the semester in which the student expects to receive the degree. Blank application forms may be obtained from the Registrar. Students applying for two or more degrees to be awarded simultaneously must receive approval from each college granting the degrees.

Conferring of Additional Baccalaureate Degrees. Students who have majors falling under different degrees may be eligible for a second degree. Candidates for a second UND baccalaureate degree must complete a minimum of 155 hours (30 additional hours beyond the University minimum of 125 hours for a first baccalaureate degree). Each successive baccalaureate degree beyond that will add 30 hours to the minimum requirement. All college and major requirements for the second degree must also be fulfilled. At least one-half of the additional 30 hours must be institutional credit. A minimum of 15 semester credits of the major and a minimum of four semester credits of the minor, if declared, must be institutional credit.

COMMON COURSE NUMBERS

All universities and colleges in the North Dakota University System (NDUS) have agreed on Common Course Numbers (CCNs) for many of the courses they have in common. When students transfer from one NDUS institution to another, the CCN transfer courses will fulfill all the same requirements as would the CCN course at the new school (*transfer CCN courses will not fulfill the last 30 hours in residence requirements nor will 100-level and 200-level courses fulfill upper division requirements). A list of UND’s CCN courses, including their previous number and title, can be found at: http://www.und.nodak.edu/dept/registrar/ccn.html. Course descriptions for each course are found under the individual department sections.

SPECIAL EXAMINATIONS FOR CREDIT

A regularly enrolled student may apply to take “special” (challenge or validating) examinations to establish credit for approved University courses. Requests to take an examination must be made to the chair of the department offering the course. Approval of the department chair, the instructor of the course and the dean of the college offering the course(s) are required. A petition with the appropriate signatures must be submitted to the Office of the Registrar prior to examinations. A committee of three appointed by the chair of the department offering the course will administer and evaluate the examinations, a majority being necessary to award a grade. Special examinations must be searching and comprehensive. Grades of “Satisfactory” or “Unsatisfactory” will be recorded on the student’s permanent record upon recommendation of the committee, but will not be used to compute scholastic average.

The fee per credit hour for a validating challenge examination is one-half the regular credit hour fee for the course to be challenged. Receipt of payment must be presented to the instructor prior to examination.

Students may apply to take challenge or validating examinations to establish credit in University of North Dakota courses which correspond to work taken at unaccredited and non-degree granting institutions, or for courses in which they have superior preparation or knowledge gained through independent study. These exams are offered for courses which have no equivalent CLEP subject exams. Students who have audited a course, or who have previously enrolled in a course and then dropped it, will not ordinarily be permitted to take a special examination in that course.

College-Level Examination Program: The University of North Dakota offers the opportunity to submit the results of CLEP for credit in most of the Subject Examinations.

CLEP Subject Examinations currently accepted by UND for transfer credits are listed below with minimum acceptable standard score. Credit earned through CLEP Subject Exams may be used to fulfill University General Education requirements, to fulfill specific course requirements, or to be used as elective credits. As soon as they become available, new examinations will be reviewed by University departments to determine their suitability for credit at UND.

The following guidelines have been established for utilization of the Subject Examinations:
1. A CLEP Subject Examination may not be taken to establish credit for a course in which a student has earned credit in a higher level sequential course.

2. Regarding CLEP Subject Examinations which offer a maximum of six to eight credits, a student with previously earned credit in one semester of a two-semester sequence must petition the CLEP Advanced Placement Committee for exception to this policy prior to taking the CLEP Subject Examination for the balance of the credit.

3. A Subject Examination may be repeated no sooner than six months after date of the last testing. Students should submit a petition to the UND CLEP Committee for permission to repeat an examination.

4. A Subject Examination may not be taken to establish credit in a subject in which the student has been enrolled, but from which he or she has withdrawn after the last day to add a course, until six months from the last class day of the term in which he/she was enrolled for the course.

5. A Subject Examination may not be used to establish credit in a subject which the student has previously failed.

6. A student wishing to have CLEP credit included within the last 30 hours toward a bachelor’s degree must have appropriate petitions approved by the CLEP Committee and the Administration Procedures Committee, since the last 30 credits must be earned in residence at the University, and CLEP credit is considered as equivalent to credit earned at another institution. All CLEP testing is now computer based. UND uses the ACE Recommended Credit-Granting Score as a guide to determine whether credit is granted.

<table>
<thead>
<tr>
<th>SUBJECT EXAMINATION</th>
<th>MINIMUM STANDARD SCORE</th>
<th>EQUIVALENT UND COURSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebra-Trigonometry</td>
<td>50</td>
<td>Math 107 (5 cr.)</td>
</tr>
<tr>
<td>American Government</td>
<td>50</td>
<td>Poli 115 (3 cr.)</td>
</tr>
<tr>
<td>Analyzing &amp; Interpreting Literature</td>
<td>50</td>
<td>English 271 &amp; 272 (6 cr.)</td>
</tr>
<tr>
<td>Biology (General)</td>
<td>50</td>
<td>Biol 150, 150L (4 cr.)</td>
</tr>
<tr>
<td>Business Law (Introductory)</td>
<td>50</td>
<td>Acct 355 (3 cr.)</td>
</tr>
<tr>
<td>Calculus with Elementary Functions</td>
<td>50</td>
<td>Math 146 (3 cr.)</td>
</tr>
<tr>
<td>Chemistry (General)</td>
<td>50</td>
<td>Chem 121, 121L (4 cr.)</td>
</tr>
<tr>
<td>College Algebra</td>
<td>50</td>
<td>Math 103 (3 cr.)</td>
</tr>
<tr>
<td>Composition, Freshman</td>
<td>50</td>
<td>English 110 (3 cr.)</td>
</tr>
<tr>
<td>Educational Psychology (Intro to)</td>
<td>50</td>
<td>Psych 213/3 (3 cr.)</td>
</tr>
<tr>
<td>History of U.S. I</td>
<td>50</td>
<td>Hist 103 (3 cr.)</td>
</tr>
<tr>
<td>History of U.S. II</td>
<td>50</td>
<td>Hist 104 (3 cr.)</td>
</tr>
<tr>
<td>Human Growth and Development</td>
<td>50</td>
<td>Psych 205A (4 cr.)</td>
</tr>
<tr>
<td>Psychology (Introductory)</td>
<td>50</td>
<td>Psych 111 (3 cr.)</td>
</tr>
<tr>
<td>Languages (French, German, Spanish)</td>
<td>50</td>
<td>Fren, Germ, Span 101 (4 cr.)</td>
</tr>
<tr>
<td>Macroeconomics (Principles of)</td>
<td>50</td>
<td>Econ 202 (3 cr.)</td>
</tr>
<tr>
<td>Microeconomics (Principles of)</td>
<td>50</td>
<td>Econ 201 (3 cr.)</td>
</tr>
<tr>
<td>Sociology (Introductory)</td>
<td>50</td>
<td>Soc 110 (3 cr.)</td>
</tr>
<tr>
<td>Trigonometry</td>
<td>50</td>
<td>Math 105 (2 cr.)</td>
</tr>
<tr>
<td>Western Civilization I</td>
<td>50</td>
<td>Hist 101 (3 cr.)</td>
</tr>
<tr>
<td>Western Civilization II</td>
<td>50</td>
<td>Hist 102 (3 cr.)</td>
</tr>
</tbody>
</table>

FOREIGN LANGUAGE PLACEMENT & CREDIT TEST

Students with a background in a foreign language which is currently taught in the Languages Department at UND may receive credit by taking a test in that language through the Languages Department. Students may receive advanced standing and from 4 to 16 credits in each language (12 in Latin). It is strongly recommended that students take this test during pre-registration or registration. Students who take it later than the end of their first semester in residence will need to see the Language Lab Director for the appropriate petition form, and will need to petition to establish eligibility. Students enrolled in a language who wish to take the Foreign Language Placement & Credit Test must take it during the first two weeks of the semester.

COOPERATIVE EDUCATION

Cooperative Education is an academic program that provides students with opportunities to both integrate and combine their course learning with practical, professional work experience in their chosen field of study. Cooperative Education experiences allow students to secure salaried, career-related work experiences under the supervision of both a sponsoring employer and the appropriate academic department, while at the same time receiving academic credit. The program is based on the belief that learning extends beyond the classroom and that the combination of course learning and practical work experience provides an innovative and comprehensive education.

Students spend from 3-9 months on Cooperative Education assignment. Academic credit is granted by the participating academic department through the student’s enrollment in the department’s course titled, Cooperative Education 397.

Students enrolled in Cooperative Education 397, irrespective of the number of actual credit hours, are granted full time equivalent student status by the University.

The Cooperative Education Program, a part of Career Services, is located in McCannel Hall, Room 204. For information, call 777-4105.

REGISTRATION

The academic year calendars giving the dates of registration appear at the beginning of the catalog. Details concerning the registration procedure are given in the Time Schedule of Classes, which is available to all students prior to and at the time of registration. Registration information is also available on the University web site.

CHANGE OF REGISTRATION

After a student has registered, he or she should consult with his or her adviser before changing the registration. Students should be aware that all drops after the first day of class could affect their ability to have financial aid in future term. The last day to drop a course without a grade for all students is on the Friday five weeks preceding the last class day of each term. (See also Summer Sessions deadlines on the academic year catalog.) Thereafter, a student may not cancel individual courses but must carry them to completion.

The last day to drop a class of less than the full semester in length (a mini-class) is a day two-thirds of the duration of the class.

If a course is dropped within the first 10 days of the semester, no indication of enrollment is made on the student’s permanent academic record. If a course is dropped after the first 10 days of the semester, the enrollment is recorded on the student’s permanent academic record and a “W” is entered in the grade column. However, all courses for which the student is enrolled after the tenth day of the term will count toward their satisfactory progress for financial aid.

No change in registration involving addition of a new course or a change of sections is permitted after the tenth day of instruction of the semester (except during Summer Session). Changes from credit to audit or to or from S/U grading are permitted to the last day to drop the course. The specific deadlines for the various types of changes of registration are published in the Time Schedule of Classes each semester.

INSTRUCTOR’S DROP POLICY

An instructor may submit a list of students to be deleted from class roles who have neither attended class nor notified the instructor of withdrawal within the first five days from commencement of University instruction. The Registrar will delete from the class rolls the names of students received and mail to the current local address a revised class schedule to each student dropped from a course in this manner.
Not all instructors follow this policy since it is not mandatory. Students, therefore, are strongly advised not to assume that they have been dropped from a course. Students should review their registration status in a course in question with the Office of the Registrar.

WITHDRAWAL FROM UNIVERSITY

A student wishing to withdraw from the University before the end of a semester must complete a Withdrawal Form in the Office of the Registrar where personnel will direct the student through the withdrawal process.

The last day a student may cancel registration without grades is the Friday five weeks preceding the last class day of the term. (See also Summer Sessions deadlines). After that time a student should continue classes to completion. An exception to this rule is that a student may have his or her registration canceled without grades for cause (major mental or physical illness or other significant incapacity) providing both the student’s Academic Dean and the Associate Vice President for Student Services agree to this course of action. Please note: Anytime a student withdraws after the first 10 days of the semester, a “W” indicating the withdrawal will appear on the student’s transcript. All courses in which the student was enrolled on the first day of the term will be considered when assessing satisfactory progress for financial aid purposes.

A student who leaves the University without obtaining an official withdrawal is given an “F” in all courses.

STUDENT LOAD

Full time status is accorded to a student enrolled in 12 hours in a Fall or Spring semester. A part-time student is enrolled in less than 12 semester hours.

For a member of the freshman class, 16 hours a semester is considered a normal schedule. Outside work or activities may necessitate a reduction of the student’s academic schedule. The class load of any freshman who ranks in the lower half of his or her high school class may be restricted to 12 semester credits. The minimum amount of work in which a student shall be enrolled is left to the discretion of the academic adviser.

For most undergraduate colleges from 15 to 17 hours of class work a week is the normal load. A student wishing to enroll in more than 21 semester hours must obtain approval from his/her adviser and the dean of the college in which the student is enrolled.

THE GRADING SYSTEM

At the close of a session or upon the completion of a course, each instructor reports a letter grade indicating the quality of a student’s work in the course. Grade points are assigned for each semester hour of credit earned, according to the following grading system:

<table>
<thead>
<tr>
<th>LETTER GRADE</th>
<th>EXPLANATION</th>
<th>GRADE PTS. PER SEM. HR.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Marked Excellence</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>Superior</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>Average</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>Passing but low</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>Failure</td>
<td>0</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
<td>—</td>
</tr>
<tr>
<td>S</td>
<td>Satisfactory</td>
<td>—</td>
</tr>
<tr>
<td>U</td>
<td>Unsatisfactory</td>
<td>—</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawn</td>
<td>—</td>
</tr>
<tr>
<td>NR</td>
<td>Not Reported</td>
<td>—</td>
</tr>
<tr>
<td>AU</td>
<td>Audit</td>
<td>—</td>
</tr>
<tr>
<td>WV</td>
<td>Course Waived</td>
<td>—</td>
</tr>
</tbody>
</table>

Incomplete Grades

It is expected that students will complete all requirements for a course during the time frame of the course. For reasons beyond a student’s control, and upon request by the student or on behalf of the student, an incomplete grade may be assigned by the instructor when there is reasonable certainty the student will successfully complete the course without retaking it. The mark “I,” Incomplete, will be assigned only to the student who has been in attendance and has done satisfactory work up to a time within four weeks of the close of the semester, including the examination period, and whose work is incomplete for reasons satisfactory to his or her instructor.

Incompletes are entered on the final grade sheet. Incomplete grades convert to grades of “F” if a grade change is not submitted by the instructor within two calendar months after the month in which the course ends after the next semester of the regular academic year (fall or spring semester) or by an earlier date specified on the incomplete form by the instructor. An incomplete may be extended for up to 12 calendar months by submitting a petition to the Office of the Registrar with the approval of the instructor of the course and the dean of the Graduate School for graduate students. An incomplete grade must be changed by 12 calendar months from the ending date of the class. An “I” may be converted as indicated above but cannot be expunged from the record.

Students may not register in courses in which they currently hold grades of incomplete, except for courses that allow repeated enrollment. A student will not be allowed to graduate with an unconverted incomplete grade on the academic record.

In Progress Grades

The Graduate School or the Honors Program may assign a grade of “SP,” Satisfactory Progress or “UP,” Unsatisfactory Progress to Honors Thesis (489), Thesis (998), Dissertation (999), Independent Study (997), Research Design (Engineering 595), English 591, Professional Exhibition (VA 599), or Research (leading to the thesis or dissertation). The “SP” or the “UP” grade for these activities, which usually span several sessions, need not be replaced until the conclusion of the activity, usually a student’s final semester. Grades of “SP” or “UP” are not calculated in term or cumulative GPA values and will be expunged from the record upon submission of final grades for the course.

Grade Changes

Submitted grades, except for grades of incomplete, are final and may only be changed to correct an error. Grades may not be changed by additional work or submitting additional materials. Students should report any error to their instructor within 90 days of receipt of the grade. The instructor must file a change of grade form to the Registrar signed by the instructor, the department chair, and the dean of the course. Reasons for the change must be fully explained and justified.

S-U GRADES

Grades of S or U rather than the traditional grades of A through F are used by the University under regulations specified. A grade of S grants credit toward graduation but does not affect a student’s grade point average except as outlined below in item number 5. A grade of U also does not affect the grade point average and does not grant credit toward graduation.

Eligible S-U Enrollment. A student of sophomore, junior or senior standing (as determined by the Registrar) may elect to enroll in one or more courses per semester for S-U grading subject to the following regulations:
1. A maximum of 30 semester hours of credit of elected S-U grades may be counted toward his or her baccalaureate degree.

2. Courses in the major field may not be taken for an S-U grade. In the event a student wishes to major in a field in which he/she has taken a required course for an S-U grade, the department, with the approval of the Academic Dean, may (a) accept the S-U grade, (b) select an additional class to substitute or (c) request the Registrar’s Office to change the S or U to the letter grade submitted by the instructor.

3. A student may take extra-departmental major requirements for an S-U grade with the approval of the major department chair and his/her Academic Dean.

4. A course elected for S-U grade will not be included in the 30 hour residency requirement (i.e., all students must complete a minimum of 30 graded credits at the University of North Dakota to receive a bachelor’s degree).

5. Repeating a course by S-U registration will eliminate the effects of the earlier grade from a student’s grade point average if the achieved result is an S. Repetition, which results in a U, will leave the effects of the earlier grade intact.

Class rolls and grade sheets will not identify students who are enrolled for S-U grading. Grades of A, B, and C will be converted by the Office of the Registrar to a grade of S, Grades of D and F will be converted to U. Changes in registration to or from S-U grading may be made up to the last day to drop the course.

Students who utilize the S-U grading system are cautioned that they may encounter difficulty in having such credit accepted or evaluated, should they attempt to transfer credit to another university, change majors, or make application for graduate or professional study.

**Required S-U Courses.** Some courses, as approved by the University Curriculum Committee, will be offered by S-U grading only. These courses may be taken in excess of the 30 hour limitation if they are required for that student’s program. Students who do enroll in a required S-U course, which is not a program requirement for them, must include it in the 30 hour maximum and comply with all other elective S-U regulations.

**REPEITION OF COURSES**

A student who receives a grade of D or F in a course may repeat the course without special permission. Courses in which grades of C or better are earned may be repeated upon written approval of the department concerned and the dean of the college offering the course and the student’s academic adviser. Without this approval, both grades will be recorded on the student’s permanent record, with the last grade being marked as duplication and not being counted in the student’s GPA. If a course repetition is taken for traditional A through F letter grading, the last grade achieved in the course will be used in calculating the student’s grade point average. Repeating an approved course with S-U grading will eliminate the effects of previous credits from the student’s GPA if the achieved result is an S, but repetition which results in a U will leave the effects of the earlier grade intact.

**RAISING A “D” GRADE**

To raise a D grade, a student may have the alternative of retaking a final examination at the time of the first regularly scheduled final examination in the subject if it meets with the approval of the department and dean of the course and the student’s adviser, except in the School of Law, the School of Medicine and Health Sciences, and the College of Nursing. If a student decides to retake the final examination, approval must be obtained from the instructor and department chair of the course and the dean of the college offering the course. No re-examination will be given except at the time of the regularly scheduled examinations at the end of each semester.

**GRADE FORGIVENESS**

Currently enrolled undergraduate students who have interrupted their college/university education for a period of seven years or more, may petition to exclude all previous grades from GPA calculations. The student may not select certain courses to be part of the seven-year rule, but must include all courses which are seven years or older. Such courses and their actual grades would appear on the student’s academic record, but letter grades would not be calculated for GPA purposes. Excluded courses could not be used to satisfy any academic requirement.

A student requesting this option must have a written petition approved by the student’s academic adviser, department chairperson, and Dean of the college from which the degree is sought. If the student changes degree college after approval of this petition, the student would be required to petition again.

**DEFICIENCY REPORTS**

Individual mid-term reports of unsatisfactory work (i.e., D, F, and U) of students are made by all instructors at the end of the first eight weeks of the semester. A grade of D is considered unsatisfactory although it is a passing grade. The Registrar mails deficiency reports to students who have been reported deficient. Reports of deficiency are also sent to the academic deans and advisers to be used for advisement purposes. Deficiency grades do not appear on the student’s permanent record. It is also the student’s responsibility to keep informed of his/her own performance in a class.

**SEMESTER GRADE REPORTS**

Grade reports are available to students by accessing their records after term grades are posted at www.snd.nodak/dept/registrar. Grade reports are not mailed, but a printed copy is available upon written request.

**TRANSCRIPTS OF ACADEMIC RECORDS**

Transcript requests must be submitted in writing. Either a completed “transcript request” form or a letter bearing the student’s signature is acceptable. Telephone requests cannot be honored nor can requests by relatives or friends of a student. A request for a transcript of credits by a student who is in debt to the University will not be honored until the indebtedness has been paid. The written request by the student should be sent to the Office of the Registrar, Box 8382, Grand Forks, ND 58202. Questions about the Family Educational Rights and Privacy Act (FERPA) should be directed to the Office of the Registrar. Faxied or “rush” transcripts are available for a fee.

Each transcript includes the student’s entire academic record to date and current academic status. Partial transcripts are not issued.

A transcript covering a student’s previous secondary and post-secondary education that has been submitted to the University as a requirement for admission becomes part of the official file and cannot be returned to the student. Any student who desires transcripts of work earned elsewhere must order official transcripts from the institution at which the work was taken. The University of North Dakota does not issue nor certify copies of transcripts from other institutions.

**STUDENTS IN DEBT TO THE UNIVERSITY**

A student who is in debt to the University shall not be permitted to early register or register in the University and shall not be entitled to receive a transcript of credits until the indebtedness has been paid.
UNIVERSITY ATTENDANCE POLICY AND PROCEDURE

Attendance and participation in class activities are considered integral parts of a university education. It is the University policy that attendance in classes is expected of all students. While attendance is necessary to demonstrate competency via participation in some classes, attendance itself is not a measure of competence and therefore is not used as a criterion for evaluation. Students’ grades are based on recognized academic standards, e.g., scholarly achievement and examination performance. Faculty are encouraged to find appropriate ways to reflect in their grading the quality of participation and contributions of students to their classes. Students are informed during the first class week of the criteria to be used in assigning grades in their courses.

In instances when a student is hospitalized or absent due to a death in the family, students are to notify the instructor if unable to attend classes.

FINAL EXAMINATION POLICY

An examination is held at the end of most courses according to the published examination schedule. Alternate evaluation methods and schedules may be used when recommended by the departmental faculty and approved by the dean of the college offering the course. Any change in time from the published schedule requires the recommendation of the chairperson of the department and approval of the dean of the college offering the course. Any student who would be disadvantaged by such a change should report this in advance to the dean of the college offering the course, who will ensure that satisfactory alternate arrangements will be made by the instructor.

A student who is absent from a regularly scheduled examination without an excuse considered valid by the instructor is normally given an F for the course. If the excuse is valid, the policy on incompletes will apply.

No undergraduate student should be obliged to write three or more finals on the same day. If the student has three or more finals scheduled the same day, the student wishing an accommodation regarding final exams should contact his/her instructor to establish a mutually acceptable time to reschedule one or more of the exams. Any student request for the rescheduled final exam must be presented to the instructor before the end of the tenth week of the semester, otherwise, the student’s rescheduling right is forfeited. If an accommodation cannot be reached, he or she should contact the department chair(s) to find a mutually agreeable time. If no agreement is reached, the appropriate dean(s) should be contacted. The final appeal, if no mutually convenient time has been found, will be to the Vice President of Academic Affairs.

UNDERGRADUATE PROBATION — DISMISSAL POLICY

Any student who does not maintain minimum academic requirements will, at the end of the term in which he or she fails to meet minimum standards, be placed on Academic Probation. Subsequent failure to meet these standards will result in dismissal from the University.

A student who has earned less than 90 total hours will be considered in Good Academic Standing if he or she maintains a UND Grade Point Average (GPA) of C (2.00) or higher. A student who has earned 90 or more total hours will be in Good Academic Standing only with a 2.00 or higher GPA on both UND and cumulative hours.

NOTE: It is possible to be in Good Academic Standing at the University, and, yet to not be in Good Academic Standing in certain University programs which require a GPA higher than 2.00.

Total hours earned toward graduation include (1) all UND hours for which a grade of A, B, C, D, or S, is recorded, (2) all hours accepted in transfer, (3) hours recorded by special examinations, (4) hours with passing grades of non-traditional nature, and (5) other hours which grant credit toward a degree.

Grade Point Average will be calculated by dividing grade points earned by average hours. Average hours include hours for which letter grades of A, B, C, D, and F are recorded. Grade points are accumulated per credit hour at the rate of A-4, B-3, C-2, D-1 and F-0.

A student on Academic Probation may remove Probation by attaining Good Standing. A student on Academic Probation who does not remove his or her probation at the end of the next term (semester or summer session) in which he or she enrolls will be dismissed. Academic probation and dismissal will be noted on the student’s transcript.

CONDUCT IN GENERAL

A student is expected to show, both within and outside of the University, respect for law and order, personal honor, and the rights of others. To further strengthen the sense of community at the University of North Dakota, we affirm the following: (1) That everyone be allowed to work, learn, and live in a safe, caring environment; (2) That everyone learn about, understand, appreciate, and respect varied cultures; (3) That everyone matters; (4) That all individuals be respected and treated with dignity and civility; (5) That everyone continue to share in the responsibility of making UND a better place.

Within the University, the student is subject to specific policies, rules and regulations promulgated by student governing groups, student-faculty committees, University Senate and the State Board of Higher Education. The student is subject to civil law and civil authority.

It is taken for granted when a student enters the University that he/she has an earnest purpose. This presumption in the student’s favor continues until, by neglect of duty or by inappropriate behavior, he/she brings his/her status into question. Cases involving student violations of academic or non-academic regulations may be judged by student conduct committees, the Student Relations Committee, or by the Dean of Students and Housing Offices. Adjudication will incorporate both substantive due process, i.e., fair and equitable treatment, and appropriate procedural due process.

The Code of Student Life, available from the Vice President for Student and Outreach Services, and the Dean of Students Office, outlines the rights and responsibilities and expected levels of conduct of citizens in the University community. The purpose of the rules outlined is to prevent abuse of the rights of others and to maintain an atmosphere in the University community appropriate for an institution of higher education. Materials included will be helpful to student organizations and to members of the University community to gain a greater understanding of responsibilities of various boards and committees, and to understand student rights and responsibilities.

Section 3 in the Code covers academic concerns (grievances and standards) and section 2 covers student conduct regulations and procedures.

The Code of Student Life is published periodically. Interpretation of sections within the Code may be requested by contacting the Dean of Students Office, the Vice President of Student and Outreach Services, or through direct consultation with the Student Policy Committee.

SCHOLASTIC HONESTY

Students are expected to maintain scholastic honesty. Scholastic dishonesty includes but is not limited to cheating on a test, plagiarism, and collusion.
A. Cheating on a test includes, but is not restricted to:
   1. Copying from another student’s test.
   2. Possessing or using material during a test not authorized by the person giving the test.
   3. Collaborating with or seeking aid from another student during a test without authority.
   4. Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or in part the contents of an unadministered test.
   5. Substituting for another student or permitting another student to substitute for oneself to take a test.
   6. Bribery another person to obtain an unadministered test or information about an unadministered test.

B. Plagiarism means the appropriation, buying, receiving as a gift, or obtaining by any means another person’s work and the unacknowledged submission or incorporation of it in one’s own work. This includes appropriation of another person’s work by the use of computers or any other electronic means.

C. Collusion means the unauthorized collaboration with another person in preparing written work offered for credit.

For detailed policy statements and procedures dealing with scholastic dishonesty, see the Code of Student Life, section 3.

ACADEMIC HONORS

President’s Honor Roll. At the end of each semester, a list of undergraduate honor students is published and designated as the President’s Honor Roll. To qualify, a student must have an overall cumulative grade point average of 3.80 or higher. The student must also have earned a minimum of 30 semester hours and have completed a minimum of 12 hours at the close of the semester, eight of which must be for traditional letter grades.

Dean’s List. The Dean’s List, published at the end of each semester, contains the names of students who are ranked in the top 15 percent of their college. The students must have completed a minimum of 12 semester hours at the close of the semester, eight of which must be for traditional letter grades.

General Honors. Candidates for the bachelor’s degree who achieve a scholastic average of 3.20 will be graduated cum laude; those with an average of 3.50, magna cum laude; those with an average of 3.70, summa cum laude. A student with transferred credits will be similarly distinguished if his/her cumulative record and record at the University of North Dakota each meet the requirements. A gold seal indicating the honor will be affixed to the diploma upon graduation. The honor will be recorded on the student’s academic record.
MISSION AND HISTORY

The principal mission of the School of Aerospace Sciences is to preserve, create, and disseminate knowledge and to demonstrate the principled use of knowledge for and about aerospace, atmospheric sciences, and computer science. In consort with other units of the University of North Dakota, it is committed to providing a comprehensive, high quality, relevant education for students preparing for careers in these fields.

Always at the forefront of technology, the School has earned national acclaim for its achievements in collegiate aviation education and atmospheric research. In just a few years, the School has received a steady stream of multi-million dollar research contracts and attracted students from every state and at least a dozen foreign countries.

The aviation program was founded in 1968 as an academic department within the College of Business and Public Administration. It offered the nation’s first four-year degree that combined an undergraduate business degree with an in-depth aviation education and professional flight training. Since then, new degree options and research programs have emerged at a rapid pace. In 1982, the Department of Aviation became the Center for Aerospace Sciences, now a degree-granting college within the University.

In 1992, the Center’s aviation degree programs became the first nationally accredited program recognized by the Council on Aviation Accreditation. In 1998, the Center was renamed the John D. Odegard School of Aerospace Sciences, in honor of its founder and first Dean, John D. Odegard.

SCOPE

The college is comprised of four academic departments and five major research and support organizations. The department of aviation offers undergraduate degrees in aerospace fields including flight, air traffic control, aviation business and management, and aviation education, as well as a master’s degree in aviation. With its roots in research, the Department of Atmospheric Sciences undergraduate and graduate programs offer students unique opportunities to participate in funded research and operational forecasting enterprises, using the department’s Digital Doppler radar and a customized Cessna Citation II research jet. The graduate program within the Department of Space Studies offers an interdisciplinary approach to space exploration, research, and development. The Department uses extra-terrestrial resources in its study of the broad area of activities beyond earth’s atmosphere. In addition to presenting the current and future technology needs, the program examines the social, political, economic, and legal issues of this new human experience. Computers are transforming almost every industry, especially the aerospace industry. To meet this challenge, the Department of Computer Science became a part of the Center in 1982 offering undergraduate majors and a master’s degree.

To facilitate its unique mix of activities, the School has formed five major support organizations. The Scientific Computing Center supports the high performance computing needs of the college for research, academic, and administrative functions, operating a variety of mainframe and mini-computers. Working in consort, the School’s Atmospheric Sciences Department, Space Studies Department, and Scientific Computing Center engage in multi-disciplinary research as the Earth System Science Institute. It’s purpose is to better understand the earth’s complex environment and generate practical tools for agriculture generated from this research. The college’s Regional Weather Information Center houses a world class forecasting and weather analysis center for agricultural, aviation, transportation, education, research, and broadcast use. It utilizes a 24-hours-a-day vanguard approach to data gathering, storage, and analysis. The School for Aerospace Sciences is the home of a unique multimedia production facility called the AeroSpace Network. It supports distance learning activities via satellite and internet, develops state-of-the art multimedia classroom presentation tools for faculty, and develops computer-based instructional materials to aid student learning. UND Flight Operations, located at the Grand Forks International Airport, supports the flight training component of the School’s aviation programs operating a fleet of more than 100 aircraft and simulators.

FACILITIES

The state-of-the-art aerospace facilities, built largely with grants from the Federal Aviation Administration, are located on the western edge of campus. The five-building complex houses some of the finest classrooms and specialized laboratories available on any college campus today. Among its many features are advanced flight simulators, cockpit procedure trainers, a high altitude chamber for aerospace physiology training, a unique air traffic control simulation lab, weather forecasting facilities with satellite downlink, sophisticated computing labs, and the Arthur C. Anderson Atmospherium — a computerized planetarium and multi-media instructional theater.

The School’s computer facilities have developed into one of the most advanced technical and scientific computer systems in the nation. It has achieved a national reputation for the processing and analysis of digital radar data and cloud physics data collected during research flights. Fully integrated systems, with advanced networking, provide a wide range of computer support activities for academic, research, government, and industry programs. The facilities are linked by fiber optics to 20,000 square feet of space dedicated to computer studies.

The School operates a modern flight training facility with a fleet of more than 100 aircraft, including reciprocating and turbine powered airplanes and helicopters. A Canadair Regional Jet (CRJ) ASCENT® Full Flight Trainer™ is also available for those students taking upper division flight courses. Aviation students fly tens of thousands of flight hours each year as an integrated part of their undergraduate aviation degrees. A five-story office building with deli cafeteria and seven hangars are among the expansive airport facilities. A 90-foot FAA Air Traffic Control Tower and an FAA Automated Flight Service Station are located within a short walking distance. A high-speed fiber optic link provides access to the School’s digital computer systems for dispatching, billing, student records, and weather data. A shuttle bus is available to transport students to and from the campus and flight operations.

ADMISSION

Students who are admitted to the University of North Dakota by the Office of Admissions are not necessarily accepted into the professional degree programs in aviation. Students must be admitted to the John D. Odegard School of Aerospace Sciences by completing a Change of Major form with their academic advisor or with a professional academic counselor at the Student Services office located at Odegard Hall, room 259.
Aviation: A student pursuing a degree program in aviation will first be admitted to the program as a Pre-Aviation student. In order to be fully admitted to a program leading to the Bachelor of Science in Aeronautics degree with a major in Air Traffic Control, Aviation Systems Management, Commercial Aviation, or Flight Education, a student must have:

1. Earned at least a 2.50 institutional GPA and overall GPA in all courses taken.
2. Completed a minimum of 24 credits.
3. Completed all required aviation courses with no grade lower than that of “C.”

Business: A student pursuing a degree program in business must be admitted to the College of Business and Public Administration as a Pre-Business student. In order to be admitted to a program leading to the Bachelor of Business Administration degree with a major in Aviation Management or Airport Management, a student must have:

1. Satisfactorily completed the specified freshman/sophomore Pre-Business courses.
2. Earned at least a 2.50 overall GPA in all courses taken.
3. Completed the six Pre-Business Core courses (Acct 200 & 201; ISys 217; Econ 201, 202 & 210) with no grade lower than that of “C.”

Further information can be obtained by contacting the Office of Academic Advisement located at Gamble Hall, room 127.

Transfer Credits: Undergraduate aviation programs, accredited through the Council on Aviation Accreditation, normally concentrate on general education courses during the first two years of a four-year program. Only a limited amount of aviation coursework is offered below the junior level. The objective of this policy is to permit the student to acquire a foundation of work in the basic arts and sciences, including a strong emphasis in mathematics and physics, as a prerequisite for professional coursework in aviation.

Students planning to take their first two years of work at a junior college should concentrate their efforts in completing the general education coursework. Students who have already received FAA pilot certification, but who have not received college credit may be required to retake the applicable aviation courses at UND in order to receive academic credit for graduation. If certain aviation courses are waived, the aviation credits are not waived, and a student must consult with his/her academic advisor as to the appropriate substitute aviation courses. Students who take aviation courses and receive credit at another academic institution may also be required to validate their aeronautical knowledge and skill before transfer credit will be granted. Questions regarding transfer credit should be directed to the Student Services office located at Odegard Hall, room 259.

DEGREES AND REQUIREMENTS FOR GRADUATION

The Department of Atmospheric Sciences, through the John D. Odegard School of Aerospace Sciences, offers the degree of Bachelor of Science in Atmospheric Sciences. This degree is conferred upon a student who successfully fulfills the graduation requirements. A student must:

1. Complete the University’s General Education Requirements.
2. Earn minimum cumulative and institutional Grade Point Averages of 2.50. (Note: transfer students must not only earn a minimum cumulative GPA of 2.50, but must also earn a minimum institutional GPA of 2.50 for studies completed at the University of North Dakota).
3. Complete the curriculum for the major as outlined in the departmental listings, and
4. Make formal application to the Registrar for the degree sought within four weeks of the beginning of the semester in which the student expects to graduate.

In addition, a student may earn a minor in Atmospheric Sciences. The curriculum for both the major and minor is outlined under the specific departmental listing.

The Department of Aviation, through the John D. Odegard School of Aerospace Sciences, offers the degree of Bachelor of Science in Aeronautics. This degree is conferred upon a student who successfully fulfills the graduation requirements. A student must:

1. Complete the University’s General Education Requirements.
2. Earn minimum cumulative and institutional Grade Point Averages of 2.50. (Note: transfer students must not only earn a minimum cumulative GPA of 2.50, but must also earn a minimum institutional GPA of 2.50 for studies completed at the University of North Dakota).
3. Complete the curriculum for the major as outlined in the departmental listings, and
4. Make formal application to the Registrar for the degree sought within four weeks of the beginning of the semester in which the student expects to graduate.

In addition, the Department of Aviation, in conjunction with the College of Business and Public Administration, offers the degree of Bachelor of Business Administration with majors in Aviation Management and Professional Flight. The curriculum for each of these programs is outlined under the specific departmental listings.

The Department of Computer Science, through the John D. Odegard School of Aerospace Sciences, offers the degree of Bachelor of Science in Computer Science. This degree is conferred upon a student who successfully fulfills the graduation requirements. A student must:

1. Complete the University’s General Education Requirements.
2. Earn minimum cumulative and institutional Grade Point Averages of 2.00. (Note: computer science majors must earn a minimum cumulative GPA of 2.20 in all computer science courses).
3. Complete the curriculum for the major as outlined in the departmental listings, and
4. Make formal application to the Registrar for the degree sought within four weeks of the beginning of the semester in which the student expects to graduate.

In addition, the Department of Computer Sciences, in conjunction with the College of Arts and Sciences, awards the degree of Bachelor of Arts with a major in Computer Science. Students may also earn a minor in Computer Science. The curriculum for each of these programs is outlined under the specific departmental listings.

The Department of Space Studies, through the John D. Odegard School of Aerospace Sciences, offers an undergraduate program leading to a minor in Space Studies. This program introduces students to the variety of space related projects and issues that will affect their careers and lifestyles in the coming decades. At other universities, it is rare to find courses at the undergraduate level dealing with such topics as space mission design, life support systems, space commercialization, and space law. The curriculum for this program is outlined under the specific departmental listing.
OTHER PROGRAMS

Cooperative Education and Internships. The School encourages its students to gain practical on-the-job experience in their chosen field prior to graduation. Cooperative Education and Internship experiences allow students to secure salaried, career-related work experiences under the supervision of both a sponsoring employer and the appropriate academic department, while at the same time receiving academic credit.

Weather Modification Pilot Training. This one-of-a-kind cooperative education program is supported by the U.S. Bureau of Reclamation. Classes are offered in ground and air cloud seeding technology taught by nationally respected cloud physicists and meteorologists. Students selected to participate as weather modification pilots for the program must have a Commercial Pilot Certificate with instrument and multi-engine ratings.

Scholarships. An extensive scholarship program is available to recognize and reward high achievers in aviation, atmospheric science, and computer science. These scholarships are donated by numerous private individuals and companies who support the School’s tradition of excellence.

Youth Programs. The Aerospace Camp offers a ten-day summer program to introduce the excitement and challenge of aerospace to 16 and 17 year old prospective aviators.

Laptop Program. In 1998 the Aviation Department instituted a laptop computer program for all aviation majors. The laptop computer enables students to acquire those computer skills highly sought by employers in business and industry while they are becoming proficient in their career field. The Aviation Department provides students an exciting opportunity to advance their technical skills using the laptop computer. It is required for all students to participate in this program.

STUDENT ORGANIZATIONS

Alpha Eta Rho (AHP). The Delta Chapter of Alpha Eta Rho, an international aviation fraternity, stresses closer ties between students and the industry through education. The group annually sponsors Parents’ Day, an opportunity for parents to experience the excitement of aviation education.

American Association of Airport Executives (AAAE). Specifically geared towards students majoring in or interested in a career in airport management, this student chapter of AAAE promotes professional development and instills professional attitudes in students who are studying aviation industry related developments, administration, and operations.

American Meteorological Society. The Lake Agassiz Student Chapter of the American Meteorological Society seeks to promote advancement and understanding of meteorology. The organization helps students build valuable network ties and gives them an opportunity to learn more about the careers offered in Atmospheric Sciences.

Army Aviation Association of America (AAAA). The UND Chapter of the Army Aviation Association of America is open to any-one with an interest in U.S. Army aviation. Emphasis is on exploring rotary wing flight and experiencing good fellowship. Each member receives the AAAA monthly publication “Army Aviation” magazine which keeps members abreast of the latest advances in Army aviation.

Association for Computing Machinery Computer Club. As the student branch of the National Association for Computing Machinery, this organization sponsors such events as computer programming contests, computer demonstrations, tutorial programs, and opportunities to visit and tour companies within the industry.

Association of Air Transport Professionals in Training (AATP). AATP represents the interests of nontraditional aviation students. All aviation students, flight instructors, faculty and administration are encouraged to participate in AATP’s activities. The group helps bring nationally recognized speakers to campus to participate in the John D. Odegard Distinguished Lecture Series, and has established a Spirit Scholarship to draw talented Native American students into UND’s flight training program.

Aviation Safety Association (ASA). ASA examines safety and professionalism issues in the aviation industry. The organization brings students together with professionals in the aviation industry for candid discussions on aviation and related matters to become further educated about the concerns in the professional community.

Dakota Space Society (DSS). The Dakota Space Society is a student organization which was established to educate and enlighten members and non-members about the benefits of space. DSS focuses on promoting space and establishing a relationship with the community of Grand Forks. DSS is open to all students from any field of study in both the undergraduate and graduate areas.

Eagle-Wing. Eagle wing is a student organization which organizes fund raising events to support Air Force ROTC activities. The funded events contribute toward ROTC cadets’ professional development, camaraderie, and esprit de corps. Membership is open to the entire UND student body.

Experimental Aircraft Association (EAA). The purpose of this UND student chapter of the Experimental Aircraft Association is to bring together students and members of the community who are interested in recreational aviation, fly-ins, Oshkosh Air Show attendance, building airplanes, the EAA Young Eagles Program, and having fun with flying.

Flying Team. The UND Flying Team has won the National Championship title of the National Intercollegiate Flying Association (NIFA) numerous times. Students compete in regional and national events oriented toward increasing aviation safety, piloting skill, and aeronautical knowledge.

International Pilot’s Association. The purpose of this student group is to help ease the transition of international students into the U.S. aviation community. While providing a network of contacts and moral support, the association actively collects facts regarding immigration and visa issues as well as information on both U.S. and international internships and sponsorships.

Organization of Minority Aviation Professionals (OMAP). This aviation student organization encourages minority students in their efforts to pursue careers within the aerospace industry. It supports the school’s efforts to recruit and retain minority students and faculty. OMAP welcomes all UND students, graduates, and faculty, as well as any other individual interested in helping the organization.

Skies Astronomical Society. The Northern Skies Astronomical Society is an amateur astronomy club established for UND students, but open to the public. The club enjoys making astronomy observations and educating others about astronomy. Equipment and extensive knowledge of astronomy are not required.

Student Air Traffic Control Association (SATCA). Students interested in Air Traffic Control get involved with this organization to have a voice in the policies and procedures affecting their program and to provide a forum for hiring information and job opportunities. In addition, the group seeks to further aviation safety, awareness, and education through air traffic control forums and meetings.

Student Aviation Advisory Council (SAAC). The six-members of the Student Aviation Advisory Council are elected by their peers to collectively act as a liaison between students, aviation faculty, and administration. The council is a key player in the implementation of new student-oriented programs.

Student Aviation Management Association (SAMA). This student aviation organization promotes professionalism in the aviation industry at the college level, and is open to students from all of the aviation related majors. The group sponsors an annual conference featuring speakers from across the nation as well as aviation alumni. Trips to major aviation destinations are planned each year.
Field of study within the traditionally broad spectrum of the liberal arts, sciences, and technology of aviation and aerospace. The group stresses increased cooperative interdisciplinary opportunities for students in all disciplines, and is actively involved in radio-controlled aircraft design, construction, and development.

UND Skydiving Club. The UND Skydiving Club is open to anyone who is interested in making a skydive or who is just interested in learning more about the sport.

Upsilon Pi Epsilon Honor Society. The student group is the National Computer Science honorary organization. Members must be junior or senior Computer Science majors. Selection is based on high scholastic achievement and is by invitation only.

Student Aviation Technology Board (SATB). SATB was created to assist the School of Aerospace Sciences in remaining on the cutting edge of technology use in an educational environment. The Board addresses student needs and concerns, but also generates new ideas for increased utilization of technological developments that would be beneficial to students.

UND Aerospace R/C. This student-run organization is dedicated to the advancement of the arts, sciences, and technology of aviation and aerospace. The group stresses increased cooperative interdisciplinary opportunities for students in all disciplines, and is actively involved in radio-controlled aircraft design, construction, and development.

HISTORY AND ORGANIZATION

The College of Arts and Sciences dates from the founding of the University in 1883, and has had organic continuity from that date, in spite of some temporary changes in name and structure. The “Act for Establishing a Territorial University at Grand Forks” provided for a College of Arts “co-existent with” a College of Letters. In 1901 the name “College of Liberal Arts” was adopted, and retained until 1943, when “College of Science, Literature and Arts” was substituted. The latter name was kept until 1967. The President of the University served in effect as dean of the College until 1901, to be followed by George S. Thomas (1901-1911), Melvin A. Brannon (1911-1914), Vernon P. Squires (1914-1930), William G. Bek (1930-1948), Robert Bonner Wittmer (1948-1965), and interim associate dean Philip A. Rognlie (1965-66). Bernard O’Kelly was dean from 1966 until his retirement in 1995 when he was succeeded by John Ettling (1995-1998). Albert Fivizzani served as interim dean of the College from 1998 until 2001 when Martha A. Potvin became dean.

The College structurally includes at present 18 academic departments: Anthropology, Art, Biology, Chemistry, Communication, Computer Science, English, Environmental Science, History, Indian Studies, Mathematics, Modern and Classical Languages, Music, Philosophy and Religion, Physics, Psychology, Sociology, and Theatre Arts. The coordinator of the Honors Program, the coordinator and faculty of the Humanities and Integrated Studies Program and the director of the Interdisciplinary Studies Program are also members of the College’s faculty. The faculty of departments structurally located in other colleges — Computer Science, Mathematics, Geology, and Political Science — are regularly consulted on an associate faculty basis, since the disciplines of those departments are historically associated with the liberal arts. Many of the liberal arts faculty are involved in various ways in the work of the College of Education and Human Development.

The College enrolls all undergraduates who wish to complete studies for the Bachelor of Arts, Bachelor of Fine Arts or Bachelor of Science degree with concentration in some substantive or applicative field of study within the traditionally broad spectrum of the liberal arts. The College also enrolls some “unclassified” students who already have a bachelor’s degree but wish to pursue further studies without formally registering in the Graduate School, and accepts auditors and special students.

MISSION

By its nature and in accordance with its history, the College of Arts and Sciences concerns itself principally with higher education in the broadest or liberal sense. The Bachelor of Arts and Bachelor of Science are therefore the principal first degrees offered by the College; through subsequent enrollment in the Graduate School, students pursue master’s or doctoral degrees in the liberal arts fields. Many undergraduates in the College are preparing themselves for specific professions — e.g., conservation, writing and editing, scientific research, the performing arts, secondary-school teaching, program planning, translation, speech therapy, the justice system, government service. However, the College’s overall goal for all students is intellectual growth through study in the liberal arts: the natural sciences and mathematics, the humanities, the social sciences, and the fine arts. These fields of study concern themselves first with the nature of humanity and of the universe, rather than with specific vocational applications.

The College of Arts and Sciences therefore pursues these goals:

1. To provide programs leading to the B.S. or B.A. in liberal arts disciplines;
2. To offer programs leading to career-ready baccalaureates in certain fields which have developed from liberal arts disciplines;
3. To offer, through most of its departments, programs leading to master’s degrees and doctorates;
4. To support scholarly and creative activity in the arts and sciences, so that both undergraduate and graduate students can be exposed to, and take an active part in, the creative and scholarly processes and the advancement of knowledge;
University of North Dakota

5. To foster in students those abilities which contribute to all learning—skills of communication; habits of independent thought, analysis and judgment; and powers of imagination and creativity;
6. To create an environment in the College, and throughout the University, which fosters the study and understanding of diverse cultures and international communities;
7. To provide the opportunity for all students at the University to take courses in liberal arts disciplines.

Students in the College of Arts and Sciences are prepared on graduation to continue their studies in graduate schools, as well as medical or law schools and other professional programs. Whether or not they pursue further study, their liberal education as undergraduates will have helped them become flexible life-long learners, and thus have prepared them for a future characterized by rapid change.

ADMISSION TO THE COLLEGE

Freshman students who have decided on a major in Arts and Sciences may be admitted directly to the College. Students enrolled in other colleges at UND who decide on an Art and Sciences major may transfer to Arts and Sciences provided they are in Academic Good Standing. Transfer students with a satisfactory academic record (generally a C or 2.00 Grade Point Average) may be admitted directly to the College. Please note that some programs, e.g., Communication, Communication Sciences and Disorders and Criminal Justice Studies, have higher grade point average requirements.

DEGREES

The only difference between the B.A. and the B.S. is that the latter degree is conferred upon students completing a major or concentration in mathematics or a natural science (biology and related fields, chemistry, geography, and physics). In Psychology there are separate requirements for the B.A. and B.S. Students with both science and non-science majors (double majors) may choose either degree.

By following certain specified programs, students may also obtain one of the following special degrees: Bachelor of Fine Arts, Bachelor of Music, B.S. in Criminal Justice Studies, B.S. in Fisheries and Wildlife Biology, B.S. in Geology, and Bachelor of General Studies (See the appropriate departmental listing.)

DEGREE REQUIREMENTS

Basic requirements are the same for all students seeking a degree through the College of Arts and Sciences (except for those in the Four-Year Honors Program). These requirements fall into three main categories.

I. University Graduation Requirements (applicable to all undergraduates).
II. Transferer Credits. No more than 12 credits of transferred technical or vocational credit shall apply to the requirements for the degrees of the College of Arts and Sciences.
III. Language Requirements. Certain programs within the College require proficiency in another language, either two semesters of College level work (Level II) or 4 semesters (Level IV). Students are advised to consult the requirements for a given major under the heading “Required in Other Departments.” Students who are unsure about what their major will be are advised to establish language proficiency as early as possible.

IV. The Major or Concentration. Majors, basically a minimum of 33 credit hours in a single field, are offered in a variety of subjects. The requirements for these may be found in the departmental and interdepartmental listings. Students should note particularly the requirements not only of the majors and concentrations, but, where appropriate, the accompanying requirements in other departments. In the Major (or concentration) students must have a grade point average of at least 2.20 by graduation.

MAJORS AVAILABLE IN THE COLLEGE

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<td>Communication Sciences and Disorders</td>
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<td>Computer Science</td>
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<td>Fisheries and Wildlife Biology</td>
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<td>Forensic Science</td>
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<td>Spanish</td>
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<td>Theatre Arts</td>
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INTERDISCIPLINARY STUDIES

Students with interests in Peace Studies, Russian Studies, Scandinavian Studies or other fields that are interdisciplinary in nature should consult the faculty in related disciplines as well as the Director of Interdisciplinary Studies.

Certain students, e.g., those in the Honors Program, may graduate without a major or concentration.

Minors. A minor is not necessary for a degree from the College, but generally a student may declare a minor in any field in which a major is offered. Where a minor is not specifically listed in the appropriate part of the catalog, a student may declare a minor only with the approval of his adviser, the Dean, and the department or departments concerned. A Grade Point Average (GPA) of 2.00 is required in a minor.

Nonprofit Leadership Certificate Program. As part of their bachelor’s degree program, students may earn the Nonprofit Leadership Certificate by completing the requirements listed in the Undergraduate Departmental listings in this catalog.

Teacher Licensure Preparation. To prepare to teach in secondary schools, students must meet requirements set by the College of Education and Human Development. In addition, the candidate must have a major or concentration in a “teaching field” as listed in the same section. Students wishing professional licensure should, as soon as possible, seek advisement from, and admission to, the College of Education and Human Development as well as A&S. To be accepted for Student Teaching, applicants must have a 2.75 Grade Point Average (GPA) in their major, a C or better in all Education coursework, and a 2.50 GPA in all work attempted up to the time of application.

Law School Preparation. The University of North Dakota School of Law, in common with others, strongly recommends as preparation for legal studies the B.A. or B.S. with a broad, liberal education rather than specialized or technical training. For more specific expectations and entrance requirements, students should consult the Bulletin of the School of Law. Majors in the humanities and social sciences are appropriate. See also the Law School.

Medical School Preparation. Like law schools, medical schools generally require a B.A. or B.S. No particular major is preferred, but a broad, liberal education is expected. In addition, the candidate should
fit into his or her program the following courses: Biology 150-151, Chemistry 121-122, Chemistry 341-342, and Physics 211-212. Biochemistry 301 is now strongly recommended by most medical schools and required by some. Math, English and Social/Behavioral Science requirements vary somewhat, but students should have the following at the very least: Math 103 and 146 (or 165 or Psychology 241); English 110 and 120 (or 125); Psychology 111 or Sociology 110. Other selected courses in the Biological Sciences are helpful. Because tomorrow’s physician not only must be accomplished in medicine, but also concerned with the social problems of people, he/she needs to have a broad-based education encompassing in some depth the natural sciences, the social and behavioral sciences, and the arts and the humanities. The student must therefore select a curriculum with these goals in mind. See also the School of Medicine listing.

Graduate Studies. Most departments in the College offer graduate work leading to the M.A., M.S., or M.Ed., and several have Ph.D., D.A. or Ed.D. programs. Students intending to continue their studies in graduate school should acquaint themselves early with the expectations and admission requirements of the various graduate programs as set out in the Bulletins of this university and other graduate schools.

PRE-PROFESSIONAL PROGRAMS

Students in pre-professional programs normally enroll in the College of Arts and Sciences. Following are recommended curricula for the various pre-professional programs. See also UND’s web site at http://www.und.nodak.edu (“Academics” to “Majors” to “Pre-Health”).

Pre-Dental

Most dental schools require a minimum of three years of college and the majority of admitted students have completed an undergraduate degree. All schools require successful completion of at least one year each of biology, physics, general chemistry, and organic chemistry. Some schools require additional specific courses. For information on dental schools and their requirements consult with the health sciences advisor in the Dean’s Office in the College of Arts and Sciences and the web site above.

Freshman Year

Engl 110, 120...College Composition I & II .................................................. (6)
Chm 121, 122...General Chemistry I & II .................................................... (8)
Biol 150, 151...Introduction to Biology I & II .............................................. (8)
Math 103...College Algebra.............................................................................. (3)

Sophomore Year

Chm 341, 342...Organic Chemistry I & II....................................................... (10)
Psyc 111...Introduction to Psychology...........................................................(3)
Elective (literature, Latin words, history, science, etc.)..................................(3)

Pre-Medical

Most medical schools require the completion of an undergraduate degree. All schools require successful completion of basic science, social/behavioral sciences, math and English courses. Some schools require or strongly recommend additional specific courses. For information on specific medical schools and their requirements, consult with the Health Sciences Adviser in the Dean’s Office of the College of Arts and Sciences and the web site above.

Freshman Year

Biol 150, 151...Introduction to Biology I & II .................................................. (8)
Chm 121, 122...General Chemistry I & II .................................................... (8)
Math 103...College Algebra.............................................................................. (3)

Sophomore Year

Chm 341, 342...Organic Chemistry I & II....................................................... (10)

Pre-Mortuary Science

The following program is designed to meet the two-year requirement in pre-mortuary science. Ordinarily this program would be followed by one year in a school of mortuary science and one year of apprenticeship. The apprenticeship could come before or after the year of mortuary science study, depending on state requirements, such as those approved by the North Dakota Board of Embalmers. See also the web site above.

Freshman Year

Engl 110, 120...College Composition I & II .................................................. (6)
Biol 150, 151...Introduction to Biology I & II .............................................. (8)
Psyc 111...Introduction to Psychology...........................................................(3)
Comm 110...Fundamentals of Public Speaking..............................................(3)
Engl 125...Technical & Business Writing (elective)....................................(3)

Sophomore Year

Chm 121, 122...General Chemistry I & II .................................................... (8)
Hist 100...History of Mortuary Science.........................................................(3)

Pre-Optometry

The requirements for admission into a school of optometry are somewhat variable, however, most optometry schools require a minimum of three years of college with the majority of admitted students having completed an undergraduate degree. All optometry schools require at least one year of biology, physics, and chemistry; and all require at least one course in calculus. Additional specific courses are required by each school. Consult with the health sciences advisor in the office of the Dean of the College of Arts and Sciences for schools and requirements and the web site above.

Freshman Year

Engl 110, 120...College Composition I & II .................................................. (6)
Math 107...Precalculus....................................................................................(3)
Anat 204...Anatomy for Paramedical Personnel/Lab.......................................(3-5)
Chem 341, 342...Organic Chemistry I & II....................................................... (10)

Sophomore Year

Engl 110, 120...College Composition I & II .................................................. (6)
Math 146 or 165...Calculus.............................................................................(5)
Chem 150, 151...Introduction to Biological I & II......................................... (8)
 Phys 211, 212...College Physics I & II............................................................(8)

Pre-Veterinary Medicine

Most veterinary schools prefer or require the completion of an undergraduate degree. Although most require no specific major, the vast majority of students entering veterinary school complete degrees in Biology, Zoology or Agriculture. All veterinary schools require successful completion of courses in the basic sciences, advanced biological sciences, social/behavioral sciences, math and English. Some schools require or strongly recommend additional specific courses.

Junior Year

Physics 211, 212...College Physics I & II .....................................................(8)

Senior Year

Biochemistry 301...Biochemistry Lecture.....................................................(3)

Junior Year

Physics 211, 212...College Physics I & II .....................................................(8)

Senior Year

Biochemistry 301...Biochemistry Lecture.....................................................(3)

** Electives should be people-centered subjects, biological sciences or courses chosen to support the specific area of interest in medicine.
For information on specific veterinary schools and their requirements, consult with the Health Sciences Adviser in the Dean’s Office of the College of Arts and Sciences and the web site above.

**Freshman Year**
- Biol 150, 151: Introduction to Biology I & II ........................................ (8)
- Chem 121, 122: General Chemistry I & II ........................................... (8)
- Math 103: College Algebra ................................................................. (3)

**Sophomore Year**
- Chem 341, 342: Organic Chemistry ................................................... (10)
- Biology 315: Genetics ..................................................................... (3)

**Junior Year**
- Physics 211, 212: College Physics I & II ............................................ (8)
- Myers 302: General Microbiology Lecture and Lab. .............................. (4)

**Senior Year**
- Biochemistry 301: Biochemistry Lecture ........................................... (3)

*Other requirements include:*
- Math 146 or 165, Psych 241
- Eng 110 and 120 (or 125)
- Psych 111 or Soc 110

**Other Biology Requirements and Electives**
- Biology 315: Genetics ..................................................................... (3)
- Biology 341, 341L: Cell Biology Lecture and Lab.
- Bio 370, 371: Vertebrate Zoology, Anatomy and Adaptations Laboratory
- Bio 442: Physiology of Organ Systems

**HONORS AND INDEPENDENT STUDY**

Students in the College are encouraged to take advantage of the educational opportunities offered by the Four-Year Honors Program and the Senior Departmental Honors Program. In these programs the student bears a greater responsibility for his/her own education than in the more formal programs of the College. Therefore the honors student must develop at once intellectual initiative and intellectual self-discipline; and usually the rewards are correspondingly greater.

Without entering either of the Honors Programs, both of which require better than average academic attainment, students will find within the College many opportunities for independent study and research for which they can receive academic credit. Most departments have “readings” or “special topics” courses in which the student can work with a faculty member in some area not covered by regular courses. Overseas study, especially for Language Majors (several of whom receive scholarships to finance their travel through the Ernberg and Larsen awards each year), is another way in which students can profitably extend the scope of their education. In a variety of circumstances, study or research done off campus can also be offered for academic credit.

Students in the College are also encouraged to plan and to propose to the Dean or to appropriate faculty members interdisciplinary courses which they believe would be educationally sound and interesting. Arts and Sciences 250 is a non-departmental course listing, under which students may earn credit for special “on-demand” courses, seminars, etc. Students or faculty members who wish to propose a special course under this number should consult the Dean’s Office.

Students who have special preparation in the subject matter of a course offered at the university or who because of particular interest bring themselves to proficiency or depth in the subject through private study may challenge the course (or courses) for credit by special examination.

**SPECIAL FACILITIES AND SERVICES**

Two research institutes, the Institute for Ecological Studies, and the Social Science Research Institute, are lodged in the college. In addition, through its various departments, the College of Arts and Sciences provides special services through the Psychological Services Center (Psychology Department) and the Speech, Language, and Hearing Clinic (Department of Communication Sciences and Disorders). In addition, all departments of the College engage in general and specialized research.

The College of

**BUSINESS AND PUBLIC ADMINISTRATION**

Dennis Elbert, Dean

**HISTORY**

A course in Commerce was organized in 1917-1918 as a four-year curriculum within the College of Liberal Arts, with students granted the degree of B.A. (Course in Commerce). A School of Commerce was organized in 1924 as an independent two-year school on a distinctly professional basis. The name was changed in 1955 to the College of Business and Public Administration. The College’s undergraduate business programs have been accredited by the AACSB International — the Association to Advance Collegiate Schools of Business — since 1984, and the MBA program has had AACSB accreditation since 1990.

**MISSION**

The University of North Dakota College of Business and Public Administration is committed to being the preeminent center of learning for business and public administration in the upper great plains. We are dedicated to preparing men and women with the academic tools, people skills, and ethical values for a lifetime of productive leadership in business, government and society. We are further dedicated to the advancement of knowledge and its dissemination to private and public institutions. In all our endeavors, we seek to develop an atmosphere of learning and scholarship which serves students, faculty, the business community, government organizations, and society.

**We Serve Students**

Our curriculum provides a solid foundation for the development of the knowledge and values requisite to successful careers in business, industry, and public service. Learning experiences consisting of classroom, tutorial, and outside activities provide a rigorous, challenging, and highly interactive environment intended to develop leaders as well as dedicated employees in business, industry, and government. By emphasizing student-professor contact through small class sizes, and in all other modes of instruction, we seek to cultivate the capacity for creative thinking, the willingness to accept challenge, and the courage to act with ethical standards and social responsibility.

**We Serve Faculty**

By nurturing an intellectually stimulating teaching and research environment, combined with appropriate resources, the College seeks innovative, interactive, and interdisciplinary approaches toward learn-
We Serve Business, Industry and Government

We emphasize comprehensive learning that combines the study of liberal arts, business, economics, and the public sector. A core value is the development of an understanding and appreciation for the role of business enterprise and government at local, national, regional, and international levels. With an understanding of the role of technology and the impact of technological change, coupled with practical business world experience, our graduates are capable of making immediate as well as long-term contributions to their organizations. Our faculty provide timely and appropriate consulting expertise serving a variety of needs. The development of interactive interdisciplinary educational and scholarly relationships among faculty, the business community, and government entities are highly valued and continuously pursued.

We Serve Society

Our graduates understand and appreciate the political, cultural, and economic system in which we all work and live. When combined with a strong work ethic, and attitude of teamwork and cooperation, a personal dedication to excellence, and an appreciation for a community of diverse individuals, long-term and lasting contributions to society are anticipated outcomes. We seek to transfer classroom knowledge to life and to instill the value of lifelong learning.

CURRICULA IN THE COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION

Ten groups of courses are offered in the College of Business and Public Administration which lead to the degree of Bachelor of Business Administration. They include: Airport Management, Aviation Management, Banking and Financial Economics, Business Economics, Entrepreneurship, Financial Management, Information Systems, Management, Managerial Finance and Corporate Accounting, and Marketing. Additionally, separate groups of courses lead to the degrees of Bachelor of Science in Public Administration, Bachelor of Accountancy, Bachelor of Science in Industrial Technology, and Bachelor of Science in Occupational Safety and Environmental Health. Detailed information on all programs may be found in the departmental listings. In order to assist business students preparing for careers in the global economy, the College offers minors in International Business and Chinese Studies and Culture and Public Administration which lead to the degree of Bachelor of Business Administration. The College also offers a minor in Information Systems. For both business and non-business students, we offer a track program in Entrepreneurship. Minor programs in Industrial Technology emphasizing Energy and Electronics, Graphic Communication, and Manufacturing are also available. Finally, the College of Arts and Sciences offers minor programs in languages, including some (e.g., French) that have an orientation in business.

The College of Business and Public Administration also offers degrees in cooperation with the College of Arts and Sciences and the College of Education and Human Development. They include Business Education, Economics, and Political Science.

The College offers a course which provides an overview of the many areas of focus in business; the Introduction to Business course (BAdm 101) provides a study of business and its environment, organization, operation, and the interrelationships with government and society. Students will become familiar with the American enterprise system and issues facing society today. The Introduction to Business course is open to anyone enrolled at the University and will fulfill a portion of the Social Science General Education Requirement.

ADMISSION

Students apply for admission to the College of Business and Public Administration through the College’s Office of Academic Advisement, room 127, Gamble Hall.

Business: A student pursuing a degree program in business is admitted to the College as a Pre-Business student. In order to be admitted to a program leading to the Bachelor of Business Administration or the Bachelor of Accountancy degrees, a student must have:

1. Satisfactorily completed the specified freshman/sophomore Pre-Business courses.
2. Earned at least a 2.50 overall GPA in all courses taken.
3. Earned at least a 2.50 overall UND GPA in all courses taken.
4. Completed the six Pre-Business Core courses (Acct 200 & 201; Brys 217; Econ 201, 202 & 210) with no grade lower than that of "C-".

Public Administration: A student pursuing a degree in public administration is admitted to the College as a Pre-Public Administration student. In order to be admitted to a program leading to the Bachelor of Science in Public Administration degree a student must have:

1. Satisfactorily completed at least 60 semester hours.
2. Earned at least a 2.50 GPA in the required Pre-Public Administration Core (refer to Public Administration section for core course listing).

Industrial Technology: A student pursuing a degree program in industrial technology is admitted to the College as a major in industrial technology.

Specified Pre-Business Courses: The freshman/sophomore Pre-Business courses, and special Pre-Business course requirements related to certain programs, are set forth below:

### Freshman Year

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Engl 110</td>
<td>College Composition I</td>
<td>(3)</td>
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<tr>
<td>Engl 128</td>
<td>College Composition II</td>
<td>(3)</td>
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<tr>
<td>Engl 125</td>
<td>Technical &amp; Business Writing</td>
<td>(3)</td>
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<tr>
<td>Math 104</td>
<td>Finite Math</td>
<td>(3)</td>
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<tr>
<td>Math 146</td>
<td>Applied Calculus I</td>
<td>(3)</td>
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<tr>
<td>Poli 115</td>
<td>American Government I</td>
<td>(3)</td>
</tr>
<tr>
<td>Comm 110</td>
<td>Fundamentals of Public Speaking</td>
<td>(3)</td>
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<tr>
<td>Psy 111</td>
<td>Introduction to Psychology</td>
<td>(3)</td>
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<tr>
<td>or Soc 110</td>
<td>Introduction to Sociology</td>
<td>(3)</td>
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<tr>
<td>or Anth 171</td>
<td>Introduction to Cultural Anthropology</td>
<td>(3)</td>
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<tr>
<td>Arts &amp; Humanities Electives</td>
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<tr>
<td>Free Elective</td>
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### Sophomore Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Econ 201</td>
<td>Principles of Microeconomics</td>
<td>(3)</td>
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<tr>
<td>Econ 202</td>
<td>Principles of Macroeconomics</td>
<td>(3)</td>
</tr>
<tr>
<td>Acct 200</td>
<td>Elements of Accounting I</td>
<td>(3)</td>
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<tr>
<td>Accr 201</td>
<td>Elements of Accounting II</td>
<td>(3)</td>
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<tr>
<td>Econ 210</td>
<td>Intro to Business and Economic Statistics</td>
<td>(3)</td>
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<tr>
<td>Lab Science</td>
<td>(see notes)</td>
<td>(4)</td>
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<tr>
<td>Arts &amp; Humanities Electives</td>
<td>(3)</td>
<td></td>
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<tr>
<td>or BSys 217</td>
<td>Fundamentals of Management Information Systems</td>
<td>(4)</td>
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<tr>
<td>or Arts &amp; Humanities Electives</td>
<td>(3)</td>
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### Notes

Students desiring to major in Airport Management or Aviation Management must take AtSc 110 for laboratory science requirement, take two semesters of a foreign language for arts and humanities requirement.

Students desiring to major in Information Systems must take Psychology 111 instead of Sociology 110 or Anthropology 171.

Students desiring to major in Management must take Psychology 111. In addition, Sociology 110 or Anthropology 171 must be taken in place of the free elective.

Transfer Credits: Accredited university undergraduate business administration programs normally concentrate the professional
courses in the last two years of a four-year program. Only a limited amount of work in business courses is offered below the junior year. The objective of this policy is to permit the student to acquire a foundation of work in the basic arts and sciences as a prerequisite for professional courses in business.

All business administration programs offered in the College of Business and Public Administration at the University of North Dakota require students to complete a minimum of 50 percent of the four years’ work in non-business courses. Students desiring a four-year degree are advised to take a majority of their work during the first two years in the arts and sciences, including a strong background in mathematics.

Students planning to take their first two years of work at a junior college should take only those courses in business that are offered as freshman or sophomore courses at the University of North Dakota and should access our articulation agreements for more information. Full lower division transfer credit will be granted for all courses equivalent to those specified for the freshman and sophomore years at the University of North Dakota.

Business administration courses taken at the freshman or sophomore level at another institution which are similar to junior or senior courses offered at the University of North Dakota will be accepted for transfer credit only if the student passes a validation examination covering each course for which transfer credit is sought. Students who take junior/senior upper division courses at unaccredited four-year schools may be required to take a validation examination. Transfer credit is not allowed for Mgmt 475, Strategic Management, the capstone course for business degree programs at UND. Validation examinations are administered by the department responsible for the course(s) in question. Students desiring to validate courses taken at another institution should contact the College’s Office of Academic Advisement, room 127, Gamble Hall.

DEGREES AND REQUIREMENTS FOR GRADUATION

The degree of B.B.A., Bachelor of Business Administration, B.S.P.A., Bachelor of Science in Public Administration, B.Acc., Bachelor of Accountancy, B.S.I.T., Bachelor of Science in Industrial Technology or B.S.O.S.E.H., Bachelor of Science in Occupational Safety and Environmental Health, is conferred upon a student who successfully completes one of the prescribed courses of study in the College of Business and Public Administration. All candidates for graduation must make formal application to the Registrar or the Office of Academic Advisement within the first four weeks of the semester in which graduation is planned.

All candidates for degrees offered by the College of Business and Public Administration must complete the University’s General Graduation Requirements (see General Education Requirement section), and complete the curriculum for at least one major in the College.

All candidates for B.B.A. or B.Acc degrees must meet the following additional requirements:

1. Be admitted to a business major offered by the College of Business and Public Administration.
2. Earn a minimum 2.50 GPA in all courses that apply toward the degree. (Transfer students must also earn at least a 2.50 GPA in all work completed at the University of North Dakota that applies toward the degree.)
3. Earn a minimum 2.50 GPA in business administration courses that apply toward the degree and major.
4. Earn a minimum 2.50 GPA in all UND business administration courses that apply toward the degree and major.
5. Complete at least 50% of the semester hours required for the degree in non-business courses.
6. Complete at least half of the business courses that apply toward the degree and major at the University of North Dakota.

All candidates for the B.S.I.T. degree must earn a minimum 2.50 overall and UND GPA.

All candidates for the B.S.O.S.E.H. degree must earn a minimum 2.20 overall GPA and a minimum 2.50 GPA in the major program of study.

All candidates for the B.S.P.A. degree must meet the following requirements:

1. Be admitted to the public administration program.
2. Earn a minimum 2.50 GPA in all courses taken. (Transfer students must also earn at least a 2.50 GPA in all work completed at the University of North Dakota.)
3. Earn a minimum 2.50 GPA in public administration courses required for the major.
4. Earn a minimum 2.50 GPA in UND public administration courses required for the major.

PROGRAMS BEYOND THE CLASSROOM

Internships. The College of Business and Public Administration, through its internship programs, provides undergraduate students with the opportunity to explore the business world while enrolled at the University. Students desiring internships may apply for placement with a business firm that has a planned learning program of work approved by the College.

Cooperative Education. Cooperative Education opportunities are available to qualified BPA students in the following areas: Accounting, Aviation, Economics, Entrepreneurship, Finance, Industrial Technology, Information Systems, Management, Marketing and Public Administration. Cooperative Education allows students to both integrate and combine their courses with practical, professional work experience in their chosen field of study. Cooperative Education experiences allow BPA students to secure salaried, career-related work experiences under the supervision of both a sponsoring employer and the appropriate academic faculty, while at the same time receiving academic credit. Students desiring Cooperative Education positions should contact the cooperative education coordinator in their major field of study.

GRADUATE EDUCATION

Graduate education in the College of Business and Public Administration includes degrees of master of Business Administration (M.B.A.), the master of Public Administration (M.P.A.) and master of Science with majors in Industrial Technology and Career and Technical Education. The master of Business Administration program is accredited by the AACSB International: the Association to Advance Collegiate Schools of Business.

FACILITIES

Gamble Hall, an attractive and well equipped building completed in 1968, is the home for most students and faculty of the College of Business and Public Administration. Teaching is enhanced through the use of modern instructional equipment including three networked microcomputer laboratories that provide students access to the internet and popular spreadsheet, database, and word processing software, as well as a wide variety of specialty software; video display equipment for in-class computer aided instruction; and video tape players with large screen monitors. As an example of the best of today’s learning technology, the Cargill Room on the third floor of Gamble Hall has a versatile design which makes it comparable to a corporate board room. The room has kidney-shaped tables that rotate to facilitate small group discussion, board room atmosphere, or a classroom environment. Equipped with video camera, projection devices, and a computer, this room allows both students and faculty to
make professional presentations with ease. This classroom was built in 1998 with a grant from Cargill Inc. primarily for use by students enrolled in the capstone course. Further, our new Lanternman investment center (scheduled for completion by fall, 2003) offers hands-on training and first-hand exposure to financial concepts such as portfolio construction, risk management, financial engineering, trading strategies, and corporate governance issues. This facility will be used by graduate and undergraduate students in all business fields in addition to being used in outreach to the business community as well as to high school students.

For students in the College, class projects and exercises will be integrated into a wide variety of classes, providing a depth and breadth of topic coverage not previously possible. This facility is the first of many new specialty rooms currently under development. Pit style classrooms in Gamble Hall are designed in amphitheater format to facilitate case study instruction. A study room, remodeled in 2002, is available within the building so that students may make profitable use of their time between classes. Two classrooms have been refitted as interactive video studios and are among the several sites currently used by the North Dakota Interactive Video Network.

THE BUREAU OF BUSINESS AND ECONOMIC RESEARCH

The Bureau of Business and Economic Research (Gamble Hall, Room 290) serves as a coordinating agency for research in the fields of business, economics and government. It initiates research directly or in cooperation with other private or public agencies and publishes the results of such research as well as that accomplished by staff members of the College of Business and Public Administration. The Bureau collects and processes basic data on business activity and serves as a repository of reference data.

BUREAU OF GOVERNMENTAL AFFAIRS

The Bureau of Governmental Affairs (Gamble Hall, Room 160) is the research and service arm of the Department of Political Science and Public Administration. It conducts research into various problems of state and local government in North Dakota either at the request of government agencies or on its own initiative. The Bureau also conducts workshops, seminars, and other conferences for the purpose of disseminating information to state and local government officials, and undertakes activities such as polling and public and non-profit management consulting. It maintains a research library for faculty and student use in conducting research on governmental problems.

THE CENTER FOR INNOVATION

The Center for Innovation (Rural Technology Center) helps entrepreneurs and small manufacturers launch new products and companies, expand existing operations, bring new products to market, develop business and marketing plans, and manages the Rural Technology Incubator. To date, over 300 new products and companies have been launched with assistance from the Center.

THE SMALL BUSINESS DEVELOPMENT CENTER

The North Dakota Small Business Development Center (Gamble Hall, Room 118) provides counseling and technical assistance to potential and existing small business owners. It serves as a link between the North Dakota University System and the private sector by providing one-to-one counseling, training and outreach assistance. In partnership with the University System and federal, state, and local agencies, it provides management and technical assistance to existing and aspiring entrepreneurs to promote a stable economy, develop new jobs in the private sector and foster growth of the free enterprise system in North Dakota.

JOB PLACEMENT

The College enjoys a strong relationship with Career Services in providing job placement services to business students. Students have the opportunity to interview with representatives from business, industry, and government who visit the campus each year for the purpose of hiring graduating seniors and graduate students who are completing advanced degrees. This procedure permits the student to examine and compare companies and positions. Career Services also assists students in preparing for and carrying out job searches through the provision of training in job search techniques, resumé/letterwriting and interviewing skills. Business faculty members are available to students for career counseling within their respective fields of expertise. Additionally, the College maintains close contact with employer groups and graduates.

BPA STUDENT COUNCIL

The College of Business and Public Administration Student Council (BPAC) of the University of North Dakota, founded in 1996, is a student organization representing all departments of the College of Business & Public Administration. The BPAC organization purpose is to coordinate and plan activities involving student organizations and to encourage communication between students, faculty, and the administration and serve in an advisory capacity to the Dean of the College of Business and Public Administration. One of the council’s activities include hosting the annual BPA conference. BPAC consists of four officers and representatives from student organizations within the college.

STUDENT ORGANIZATIONS

Student organizations in the College of Business and Public Administration include the following clubs, associations, and professional affiliations: Accounting Club, National Association of Industrial Technology, American Marketing Association, Distributive Education Clubs of America, Toastmasters, Association for Investment Management and Research, Information Management Club, Management Club, MBA Student Association, American Indian Business Leaders, Entrepreneurship Club, Public Affairs Club, Society of Manufacturing Engineers.
The Division of
CONTINUING EDUCATION
James Shaeffer, Dean

HONOR SOCIETIES
Student honor societies in the College of Business and Public Administration include Alpha Tau, Beta Alpha Psi, Beta Gamma Sigma, Delta Phi Epsilon, Epsilon Pi Tau, Omicron Delta Epsilon, Phi Beta Lambda, Pi Sigma Alpha, Pi Omega Pi, and Sigma Iota Epsilon.

HISTORY AND MISSION
An organized program of extension activities was first established at the University of North Dakota in 1910. Dr. Frank L. McVey, then President of the University, provided the initial support of the University of North Dakota providing life-long learning in his inaugural address in the spring of 1910 when he said, “Education neither begins nor ends with the four years of a college course.” To support the mission of life-long learning, the University has been a long-term member of the University Continuing Education Association. The Association promotes and upholds standards for extension services by imposing strict procedures for the admission of colleges and universities.

In 1968 the name of the General Extension Division was changed to the Division of Continuing Education. In order to more adequately describe the duties assigned to the Dean of Continuing Education, the title was changed to Dean of Outreach Programs in 1978, but the name of the Division remained unchanged. A restructuring in 1998 resulted in Continuing Education becoming a member of the newly formed Division of Student and Outreach Services.

The mission of the Division of Continuing Education is to promote life-long learning, economic development and to offer quality educational opportunities, programming and services by extending the resources of the University. The Division attempts to determine the educational and informational needs of the citizenry of North Dakota that cannot be provided through the regular on-campus programs. Once determined, the goal is to serve those needs whenever possible, providing the activity is consistent with the policies and philosophy of the University. This is accomplished through a cooperative and coordinated effort with the various academic departments by utilizing their research capabilities and available instructional resources.

The manner in which “extension” is provided varies according to situation and need. The Division administers the following: credit correspondence study, extension courses, conferences, seminars, workshops, certificate programs, University within the University, Work Force Development, evening and weekend courses and off-campus Graduate degree programs at the UND Graduate Center at Bismarck and to a national and international audience.

Extension Program
Extension courses are workshops offered to professionals for graduate credit. Most of the workshops deal with topics related to education, personal growth and working with youth. The credits earned through these workshops count towards certification renewal and local school district salary-lane changes. The appropriate academic department and colleges approve all workshop courses and instructors. Since these courses are not designed for the purpose of being part of a graduate degree program, their credit normally may not be applied toward a graduate degree.

Additional information can be obtained by calling: (701) 777-4225 or toll-free 1-877-450-1842, by writing: Extension Program, Division of Continuing Education, University of North Dakota, Box 9021, Grand Forks, ND 58202-9021 or by visiting our web site at: http://www.conted.und.edu/ext/.

EVENING AND WEEKEND COURSES, PROGRAMS
The Division of Continuing Education in coordination with the University of North Dakota’s academic colleges and departments offer courses and degree programs in the evening in Grand Forks as well as other communities throughout the State of North Dakota through the Interactive Video Network.

Programs include the Master of Public Administration and Master of Business Administration from the College of Business and Public Administration; the Master of Education in Special Education, Master of Education in Educational Leadership, Master of Science in General Studies in Education, Master of Science in Elementary Education and Ph.D. of Teaching and Learning: Higher Education, Master of Social Work, and a graduate certificate program in Autistic Spectrum Disorders from the College of Education and Human Development.

Additional degree programs offered through videotape and online include Master of Space Studies from the John D. Odegard School of Aerospace Sciences and a Bachelor of Science in Chemical, Civil, Electrical and Mechanical Engineering from the School of Engineering and Mines.

Additional information can be obtained by calling: (701) 777-4884 or toll-free 1-877-450-1842, by writing: Distance Degree Programs, Division of Continuing Education, University of North Dakota, Box 9021, Grand Forks, ND 58202-9021 or by visiting our web site at: http://www.conted.und.edu/extended/.

CORRESPONDENCE STUDY
Correspondence Study offers more than 80 courses from 25 UND departments. Correspondence Study is flexible, allowing students to enroll at anytime, work at their own pace and study in a place of their choosing. Students have nine months from their enrollment date to complete a course. Correspondence Study allows the student to learn and grow while managing family and/or work responsibilities.

Additional information can be obtained by calling: (701) 777-2661 or toll-free 1-800-342-8230, by writing: Department of Correspondence Study, Division of Continuing Education, University of North Dakota, Box 9021, Grand Forks, ND 58202-9021 or by visiting our web site at: http://www.conted.und.edu.

Credit Courses

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<tr>
<th>Accounting and Business Law</th>
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<tbody>
<tr>
<td>200</td>
<td>Elements of Accounting, 3 credits</td>
<td>201</td>
</tr>
<tr>
<td>Anthropology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>170</td>
<td>Introduction to Biological Anthropology, 3 credits</td>
<td>171</td>
</tr>
<tr>
<td>340</td>
<td>Medical Anthropology, 3 credits</td>
<td>345</td>
</tr>
<tr>
<td>Business Administration</td>
<td></td>
<td></td>
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<tr>
<td>395</td>
<td>Grantwriting, 3 credits</td>
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<tr>
<td>Chemical Engineering</td>
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<tr>
<td>201</td>
<td>Stoichiometry, 3 credits</td>
<td></td>
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<tr>
<td>Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>Introduction to Media Writing, 3 credits</td>
<td>201</td>
</tr>
<tr>
<td>244</td>
<td>Reporting and Feature Writing, 3 credits</td>
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</tbody>
</table>
308 Argumentation, 3 credits
313 Persuasion, 3 credits
322 Editing, 3 credits
328 Community Journalism, 3 credits
401 Organizational Communication

Economics
201 Principles of Microeconomics, 3 credits
202 Principles of Macroeconomics, 3 credits

English Language and Literature
110 College Composition I, 3 credits
120 College Composition II, 3 credits
125 Technical and Business Writing, 3 credits
224 Introduction to Fiction, 2 credits
303 Survey of American Literature, 3 credits
365 Black American Writers, 3 credits

Fine Arts
150 Introduction to Fine Arts, 3 credits

Geography
134 Introduction to Global Climate, 3 credits
151 Human Geography, 3 credits
161 World Regional Geography, 3 credits
263 Geography of North Dakota, 3 credits
362 Geography of Canada, 3 credits

Geology
101 Introduction to Geology, 3 credits
101L Introduction to Geology Lab, 1 credit

History
101 Western Civilization I, 3 credits
102 Western Civilization II, 3 credits
103 United States to 1877, 3 credits
104 United States since 1877, 3 credits

Humanities
101 Humanities I, 4 credits

Information Systems
309 Information Resource Administration, 3 credits
315 Records & Information Management, 3 credits

Information Systems & Business Education
444 Philosophy of Vocational Education, 3 credits

Languages: Modern and Classical
French (Fren)
101 First Year French I, 4 credits
102 First Year French II, 4 credits

Spanish (Span)
101 First Year Spanish I, 4 credits
102 First Year Spanish II, 4 credits

Management
305 Managerial Concepts, 3 credits

Mathematics
102 Intermediate Algebra, 3 credits
103 College Algebra, 3 credits
104 Finite Mathematics, 3 credits
105 Trigonometry, 2 credits
107 Pre-Calculus I, 5 credits
146 Applied Calculus I, 3 credits
165 Calculus I, 4 credits
166 Calculus II, 4 credits
208 Discrete Mathematics, 3 credits
265 Calculus III, 4 credits
266 Elementary Differential Equations

Music
100 Introduction to the Understanding of Music, 3 credits

Nutrition and Dietetics
240 Fundamentals of Nutrition, 3 credits

Occupational Therapy
200 Introduction to Occupational Therapy, 2 credits
205 Medical Terminology, 1 credit

Philosophy
101 Introduction to Philosophy, 3 credits

Psychology
110 Introduction to Psychology, 3 credits
241 Introduction to Statistics, 4 credits
250 Developmental Psychology, 4 credits
270 Abnormal Psychology, 3 credits
355 Adulthood and Aging, 3 credits
360 Introduction to Personality, 3 credits
361 Research in Social Psychology, 3 credits

Religion
203 World Religions, 3 credits
345 Death and Dying, 3 credits

Sociology
110 Introduction to Sociology, 3 credits
309 Selected Topics: Sociology of Military, 3 credits
331 Rural Sociology, 3 credits
335 The Family, 3 credits

Teaching & Learning
200 Exploring Teaching, 2 credits
286 Field Experience
350 Development & Education of the Adolescent, 3 credits
460 Microteaching

Visual Arts
110 Introduction to Visual Arts, 3 credits
120 Introduction to Drawing and Color Materials, 3 credits
391 Special Topics: Visual Thinking, 3 credits

All matters pertaining to registration and credit are handled through the Division of Continuing Education.

Admission
A Correspondence Study student is initially admitted with non degree status to the University. Enrollment in courses beyond twelve semester credits will be contingent upon meeting the entrance requirements for a regular degree seeking student.

Upon completion of a course, a grade is forwarded to the Registrar’s Office. Students who fail to finish or withdraw from their course prior to their completion date will earn a failing grade. Transcripts may be requested from the Registrar’s Office and may be sent to another institution upon written request.

GENERAL INFORMATION FOR THE BISMARCK/MANDAN AREA

The University of North Dakota offers graduate degree programs through the UND Graduate Center/Bismarck. These programs are designed in flexible formats for working adults who find it necessary to earn a graduate degree during evening and weekend hours. The UND Graduate Center/Bismarck is located on the Bismarck State College campus and has a long history of providing courses and graduate degree programs to the Bismarck-Mandan area. Programs offered through the UND Graduate Center/Bismarck include Masters degrees in Business Administration, Public Administration, Special Education, Educational Leadership, General Studies in Education, Elementary Education, Social Work, and a Ph.D. in Teaching and Learning: Higher Education.

The higher education courses are delivered to Bismarck either via on-site instruction or via the North Dakota Interactive Video Network (ND-IVN). The ND-IVN system links cover 150 communities across the state and provides students an opportunity to take coursework without leaving their vicinity. The Interactive Video Network allows an expansion of University of North Dakota offerings because faculty members can teach students on campus while reaching those at a distance at the same time. Faculty also may teach from "remote receiving sites" in order to enhance and build positive student-faculty relationships. The students and faculty members can see and interact simultaneously in multiple classroom locations. The Graduate Center has served the Bismarck-Mandan areas since 1976. Hundreds of students have taken courses and received degrees through off campus programs.

Additional information can be obtained by calling: (701) 224-5437 or toll-free 1-800-445-5073, or by writing: UND Graduate Center/Bismarck, 1309 Schafer Street, PO Box 5587, Bismarck, ND 58506-5587 or by calling the UND Division of Continuing Education at (701) 777-4884 or toll-free at 1-800-450-1842.
OFFICE OF CONFERENCE SERVICES

The Office of Conference Services assists clients in shaping their conferences and seminars into successful educational opportunities, offering total conference coordination as well as access to the rich resources of the University of North Dakota. Services available include professional program development, financial management, promotion and marketing, registration, on-site coordination, instructional support, program management, evaluation and record keeping.

Additional information can be obtained by calling: (701) 777-2663 or toll-free 1-866-579-2663, by writing: Office of Conference Services, Division of Continuing Education, University of North Dakota, Box 9021, Grand Forks, ND 58202-9021 or by visiting our web site at: http://www.conted.und.edu/conferences/.

OFFICE OF CERTIFICATE PROGRAMS

The Office of Certificate Programs provides distance education for non-academic credit or certification programs. Courses are aimed at professional development in a wide variety of areas. Enrollment is open, meaning students may enroll at any time, and complete within a specified time frame. Course completion is flexible and self-paced. Special emphasis on Dietary Managers, Real Estate, and Medical Billing and Coding certification courses. Additional information can be obtained by calling: (701) 777-4269 or toll-free 1-877-450-1841, by writing: Office of Certificate Programs, Division of Continuing Education, University of North Dakota, Box 9021, Grand Forks, ND 58202-9021 or by visiting our web site at: http://www.conted.und.edu/courses/.

Certificate Programs:

1. Conflict Resolution, 2.0 Continuing Education Units (CEU’s) - also online
2. Food Service and Nutrition
   - Basics of Nutrition Assessment, 3.6 CEU’s - also online
   - Diabetes Nutrition Therapy, 3.0 CEU’s
   - Dietary Managers Certification Course, 32 CEU’s
   - ServSafe, 2.2 CEU’s - also online
   - ServSafe Re-certification, 6 CEU’s - also online
3. Menu Planning for Health Care Facilities, 3.6 CEU’s
4. Nutrition and Aging, 4.2 CEU’s
5. Nutrition Principles for Dietary Personnel, 5.8 CEU’s
6. Nutrition Therapy for Dietary Personnel, 5.8 CEU’s
7. Sports Nutrition, 3.6 CEU’s
8. GRE Review Course
9. Health Care
   - Basics of Medical Terminology, 3.6 CEU’s - also online
   - Introduction to Alzheimer’s Disease, 3.6 CEU’s
   - Administrative Medical Specialist (Medical Billing and Coding), 18 CEU’s - online
10. Advanced Coding for the Physician’s Office, 9.6 CEU’s - online
11. MCAT Review Course
12. Mathematics
   - Math 100, Refresher Course in Mathematics, 5.4 CEU’s
13. Paralegal Certificate Course, 10 CEU’s - online
14. Real Estate
   - Real Estate Pre-licensure Course, 3.6 CEU’s
15. Webmaster
   - Webmaster Certification, 18 CEU’s
16. Webmaster Certification, 18 CEU’s

Admission

A Certificate program student is not required to apply for admission to the University. If a certificate course student later desires to be admitted to the University, a regular and separate application must be filed with the Office of Admissions.

Upon satisfactory completion of a course, a transcript and certificate of completion will be forwarded to the student. A transcript may be requested from the Division of Continuing Education to be sent to another institution upon written request.

UNIVERSITY WITHIN THE UNIVERSITY

The University Within the University is designed to coordinate the planning and delivery of campus professional development and training activities for UND employees through an integrated approach to needs assessment, planning, marketing, and program delivery.

Additional information can be obtained by calling: (701) 777-4266 or toll-free 1-800-342-8230, by writing: University Within the University, Division of Continuing Education, University of North Dakota, Box 7131, Grand Forks, ND 58202-7131 or by visiting our web site at: http://www.conted.und.edu/U2.

WORK FORCE DEVELOPMENT

The Work Force Development Office is the “gateway” for business and industry to the talents, expertise and technologies that are available through the University of North Dakota. The Office of Work Force development is based on the concept that the University is a long-term strategic partner of business and industry and the preferred provider of workforce development services and training. Services available to business and industry include facilitation services, strategic planning services, research for business and industry, human resources consulting, the management of training departments, the development of training plans and curriculum, and revenue procurement (grantsmanship) on behalf of business and industry to support their individual workforce development initiatives.

Additional information can be obtained by calling: (701) 777-2313 or toll-free 1-800-342-8230, by writing: Work Force Development, Division of Continuing Education, University of North Dakota, Box 7131, Grand Forks, ND 58202-7131 or by visiting our web site at: http://www.conted.und.edu/workforce/.

The College of
EDUCATION AND HUMAN DEVELOPMENT
Dan Rice, Dean

ORGANIZATION OF THE COLLEGE

The College of Education and Human Development was formed in 1996 through a merger of the Center for Teaching and Learning with three of the departments from the College for Human Resources Development. The College includes six academic departments: Counseling; Educational Foundations and Research; Educational Leadership; Physical Education, and Exercise Science; Social Work; and Teaching and Learning. Also affiliated with the College are the Bureau for Educational Services and Applied Research, the University Children’s Center, and three bureaus of the Department of Social Work: Child Welfare Research Bureau; Resource Center on Gerontology; and the Children and Family Services Training Center.
MISSION

The College of Education and Human Development has the unique mission within the University of fostering healthy human development and learning across the lifespan, beginning in early childhood. In support of this mission, the College actively embraces human and cultural diversity as an asset and seeks to weave it throughout all of our activities. At both the graduate and undergraduate level, students in EHD develop the skills and self-awareness to become effective professionals and leaders in schools, higher education, human service and wellness organizations. In these roles, graduates of EHD empower individuals, families, groups, organizations, and communities to make healthy decisions and lead full and productive lives. Through these efforts, graduates serve a vital function in recreating and maintaining a healthy economy and enhanced quality of life.

The six departments of EHD employ a multi-faceted approach to education, relying on research, teaching and service in the education of students. The continuing development of effective and innovative instruction methods provides excellent service and education to diverse groups of students, including those both on and off the UND campus. The constellation of disciplines within the college emphasizes basic and applied research with implications for individual development and social change. This emphasis is reinforced by the professional service provided by faculty throughout the college, many of whom are involved in service to members of the community in mental health, wellness, and teaching roles. Within all three domains—teaching, research, and service—we attempt to form partnerships with community, state, tribal, and national organizations and government, as well as schools and human service agencies, to provide a more comprehensive effort to foster human development and learning. We especially seek to develop mutually supportive partnerships with historically under-served populations.

HISTORY

Although the College of Education and Human Development is new, its disciplines have a long history at the University of North Dakota.

The University of North Dakota has offered teacher education programs since its founding in 1883. The preparation of teachers at UND was coordinated by the Normal Department from 1883 to 1900; by the Normal College from 1900 to 1905; by Teachers College from 1905 to 1911; by the School of Education from 1911 to 1953; and by the College of Education until 1972, when programs of that college merged with the New School for Behavioral Studies to form the Center for Teaching and Learning. The present education faculty continue the UND traditions of leadership to the schools, colleges, and communities of North Dakota and the Upper Midwest; of promoting a broader view of education; and of providing teachers, administrators, and other educational personnel with intensive, intellectually challenging, integrated programs of study.

Physical activity has been important to students since the early days of UND, whose history shows interesting differences in the development of programs for men and women. The Department of Health, Physical Education and Exercise Science was formed in 1963 from a merger of the women’s department of physical education, founded in 1893, and the men’s department, established by 1906. In addition to developing the physical potential of all participating UND students, programs of the department prepare professional leaders for careers in physical education, and exercise science in many settings.

Although courses in Counseling were offered by UND faculty as early as 1924, development of a formal program was spurred in the 1950’s by the National Defense Education Act, which sponsored preparation of school guidance counselors. With leadership from the Department of Psychology and the College of Education, the Department of Counseling was established in 1963. As part of the College for Human Resources Development, the Department broadened and deepened its programs, which focus on counseling in a wide variety of settings.

The first social work courses were offered at UND by Dr. John Gillette, a member of the Department of Sociology. A social work program was started in 1911. By 1967, when the Department of Social Work was founded, UND students and faculty had invested much effort and creativity in the promotion of social welfare. In 1972, the department moved from the College of Arts and Sciences to the College for Human Resources Development, where it has developed programs to prepare and support professionals, with a focus on practice in rural communities.

ACCREDITATION

UND’s basic (undergraduate) and advanced (graduate) programs for the preparation and continuing education of teachers and other school professionals are accredited by the National Council for the Accreditation of Teacher Education and approved by the state of North Dakota through 2006. Programs in social work are accredited by the Council on Social Work Education. In 1998, it grew to include UND’s program in Recreation and Leisure Services. The Doctoral Program in counseling is accredited by the American Psychological Association.

DEGREE PROGRAMS, MAJORS, AND MINORS

Bachelor’s degrees are conferred on students in the College of Education and Human Development who satisfactorily complete the prescribed programs of study in their majors and who satisfy the degree requirements of the University and the College. The following undergraduate degrees are offered by departments of the College.

Physical Education and Exercise Science

- B.S. in Physical Education

Social Work

- B.S. in Recreation and Leisure Services
- B.S. in Rehabilitation and Human Services
- B.S. in Social Work

Teaching and Learning

- B.S. Ed. with major in Business Education
- B.S. Ed. with major in Early Childhood Education
- B.S. Ed. with major in Elementary Education
- B.S. Ed. with major in Elementary/Early Childhood Education
- B.S. Ed. with major in Elementary/Elementary Education
- B.S. Ed. with major in Elementary/Middle Level Education
- B.S. Ed. with major in Elementary/Physical Education
- B.S. Ed. with major in Elementary/Visual Arts Education
- B.S. Ed. with major in Vocational Marketing Education
- B.S. Ed. with major in Middle/Junior High Education
- B.S. Ed. with major in Science Education
- B.S. Ed. with major in Social Studies Education (secondary)

Students preparing to teach in the secondary schools may fulfill teacher education requirements by completing the following degree programs and the professional education program in the Department of Teaching and Learning.

- B.A. with major in Communication
- B.A. with major in Education
- B.A. with major in French
- B.A. with major in German
- B.A. with major in Spanish
- B.S. with major in Industrial Technology
- B.S. with major in Biology
- B.S. with major in Chemistry
- B.S. with major in Geology
- B.S. with major in Geography
- B.S. with major in Mathematics
- B.S. with major in Physics
- B.F.A. with major in Visual Arts
Students preparing to teach music or physical education in the schools may fulfill requirements to teach grades 1 through 12 by completing the following degree programs and the professional education program in the Department of Teaching and Learning.

B.S. in Physical Education
Bachelor of Music

Minors may be taken in a wide variety of fields including athletic coaching, chemical use/abuse awareness, gerontology, health education, recreation and leisure services, rehabilitation services, special education, middle level education, and early childhood education.

The appropriate sequences and experiences for these degree programs and minors are described in the department sections of this catalog appropriate to them.

ADMISSION REQUIREMENTS

Admission to the College of Education and Human Development may occur at the time a student is admitted to the University and has declared a major or pre-major in the college. Students considering a major in one of the departments of the college are encouraged to seek information from the College Office of Advising and Admissions located in room 105 of the Education Building.

All students must satisfy any special program admission requirements established by the department in which the student plans for major or for admission to Teacher Education. Students should contact the chairperson of the department or the College Office of Advising and Admissions for details about policies, procedures, and timelines.

Admission to Teacher Education

Formal admission to Teacher Education is required of all students before enrollment in the core courses of each program. The admission decision is made in part on information supplied by you. Application forms are available in the Office of Advising and Admissions, Education Building, Room 105 at the start of each semester and also through the College of Education and Human Development’s web page. Applications must be submitted before the deadline. Late applications will not be considered. Incomplete applications will be returned.

Notification of admission decisions takes approximately 30 working/school days.

Admission to Teacher Education is competitive and the numbers admitted each semester may be limited due to resources. An Admission Committee will consider your academic record in making an admission decision. Beginning Spring Semester, 2003, admission into a teacher education program requires a cumulative 2.75 GPA and completion of 30 hours that apply to graduation. Other factors that are taken into consideration are:

- Grade point average
- Completion of prerequisite courses
- Strength of academic record
- PPST scores – must meet the minimum of 172 Math; 173 Reading; 173 Writing
- Quality of letter of application – consider clarity of expression and seriousness about becoming a teacher
- Professional Dispositions Report
- Available openings in your anticipated area of study

Factors for you to consider when making application to the Teacher Education Program:

- Travel to off-campus locations will be required as part of the program at your expense.
- Full-time, daytime attendance will be required at various times of your program.
- Graduation from the program does not guarantee licensure to teach.

In order to obtain teacher licensure, you will be required to submit a full background check and FBI fingerprint check. Each state to which you apply for certification/licensure is likely to require a separate background check. Individual school districts may require background checks before you can be placed for field experiences. Misdeemeanor or felony convictions, other than minor traffic offenses, may prevent you from obtaining state teaching certification/licensure, even if you successfully complete the program.

Keys to successful completion of the Teacher Education Program:

- Meet all academic requirements.
- Satisfactory performance in field experiences completed prior to student teaching.
- Perform the essential functions of a program to prepare you for a full-time teaching position, with or without reasonable accommodations.
- No illegal drug or alcohol use.
- Interact effectively with people.
- No convictions of an offense that would authorize or require the superintendent of public instruction to refuse to grant a teaching license.
- Adhering to the UND Code of Student Life, evidence of competence, morality, temperance and kindness on your part.

DESIGN OF THE CURRICULUM OF THE TEACHER EDUCATION PROGRAM

Undergraduate Programs. Programs for the preparation of teachers at UND reflect the tradition of progressive education. The progressive vision includes individualized, developmentally-appropriate, and constructivist curriculum; student-centered learning; interdisciplinary approaches to solving real problems; use of primary resources and direct experiences of learners; commitment to community involvement and to the school as a model of democracy; valuing of diversity; and commitment to humane and holistic understandings of learning, teaching, and evaluation.

Programs are designed to enable development of teachers who are committed to life-long learning about many things, but especially about the process of teaching; who are able to take an active role in promoting the learning of students; and who can envision resolution to the dilemmas of teaching which contribute to a democratic, humane, and just society. Connections between the experiences of preservice teachers as learners and their preparation as teachers are nurtured in the programs through such practices as field experiences, structured writing, group learning, and portfolio assessment.

The goals of the basic programs in teacher education are to support the development of teachers who are learners, active agents of learners and articulate visionaries. These goals are supported by the licensing standards of our state and the guiding principles of our learned societies.

GRADUATION AND TEACHER LICENSURE REQUIREMENTS

All students graduating from the College of Education and Human Development will complete all requirements of the department of the student’s major and all graduation requirements of the University. In addition, the College requires that students earn a minimum GPA of 2.20 in all work taken and, in the case of transfer students, a minimum of 2.20 in all UND work. This minimum GPA requirement is superseded, however, by the higher GPA requirements of some programs.

Students who are formally admitted to and complete a teacher education program approved by the state of North Dakota, receive a bachelor’s degree with an overall GPA of at least 2.75, and meet the...
legal requirements which include a satisfactory criminal background check, are eligible for licensure to teach in North Dakota. Students apply to the North Dakota Education Standards and Practices Board for licensure using forms that are available. Application should be initiated prior to graduation. Students interested in teacher licensure in states other than North Dakota should seek information in the College Office of Advising and Admissions.

OTHER REQUIREMENTS OF TEACHER EDUCATION STUDENTS

Continuous assessment. Student progress in teacher education programs is evaluated through regular review of portfolios assembled by students. Students are asked to save and file all work completed in courses of their teacher education programs. At several points in each program, students review their work with faculty and other students. Portfolio assessment offers opportunities to discuss individual growth as a teacher and learner and to assess progress in addressing program themes. Effective use of writing in many situations is essential for completion of teacher education programs and is considered in the portfolio assessment process.

Admission to student teaching. Student teaching is required in all teacher education programs. Each student teaching placement requires work and planning on the part of the student, the Director of Student Teaching and Field Experiences, the cooperating faculty in the schools, and the faculty from the department of the student’s major. Deadlines for applying for student teaching are established each semester. Check in the College Office of Advising and Admissions for exact dates. Late applicants cannot be guaranteed placement in the preferred semester.

Acceptance for student teaching requires that students in all majors which include Elementary Education and in Middle Level Education complete each course in Teacher Education through Applied Methods (TEAM) with a minimum grade of C, satisfactorily complete a field experience, present a minimum overall GPA of 2.75 based on at least 76 hours of work, and are recommended by the faculty in their area(s) of student teaching. Admission to student teaching in a secondary education program requires that the student has completed or is enrolled in all courses of the major and the professional education programs, has an overall GPA of at least 2.75, has a minimum GPA of 2.75 in the major coursework completed at the time of application, and is recommended by the Teaching and Learning faculty and the student’s adviser(s).

Although student teacher placement is usually made in greater Grand Forks and the surrounding area, more distant placements can often be arranged for students whose performance in the program is strong and who are recommended by the faculty. Student teaching placement in the area of social studies may be limited by the availability of cooperating teachers.

The College of Education and Human Development also offers undergraduate majors in the following fields:

- Physical Education and Exercise Science
- Recreational and Leisure Services
- Rehabilitation and Human Services
- Social Work

For information about these academic programs, turn to the appropriate sections in this catalog.

Graduate studies. At the graduate level, the College offers advanced programs of preparation for counselors, counseling psychologists, social workers, physical education professionals, teachers, school administrators, and other educational personnel for schools and institutions of higher education.

The Department of Social Work offers a graduate program leading to the Master of Social Work (MSW) degree. The M.S. with a major in Physical Education is offered by the faculty in the Department of Kinesiology, and Exercise Science. The Department of Counseling offers graduate programs leading to the M.A. with a major in Counseling and to the Ph.D. with a major in Counseling Psychology.

The Department of Educational Leadership offers programs leading to the M.Ed. and M.S., the Educational Specialist (Ed.S.), and the Ed.D. and Ph.D. with a major in Educational Leadership. The Department of Teaching and Learning offers programs leading to the M.S. with majors in Early Childhood Education, and to the M.Ed. and M.S. with majors in Elementary Education, Reading Education, and Special Education and, with faculty in the Department of Educational Foundations and Research, programs leading to the M.S. in General Studies in Education and to the Ed.D. and Ph.D. with major in Teaching and Learning.

The School of Engineering and Mines

HISTORY AND ORGANIZATION

The University charter, in compliance with the Federal Enabling Act of February 22, 1889, which provided a land grant of 40,000 acres for the School of Mines in harmony with the Constitution of North Dakota, located the School of Mines at Grand Forks and made the School of Mines the Engineering College of the University of North Dakota.

The School of Engineering and Mines offers programs in Chemical Engineering, Civil Engineering, Electrical Engineering, Environmental Engineering, Environmental Geosciences, Geological Engineering, Geology, and Mechanical Engineering. All programs are housed in a central campus location with lecture rooms and laboratories in Upson I and II, Harrington Hall, and Leonard Hall.
individuals through the Distance Engineering Degree Program (DDEP). Continuous and on-going assessment of student learning in accordance with specific program outcomes, including input from program constituents such as students, alumni, employers and industry advisory groups, provides opportunity to measure success and effect program improvement in meeting the mission of the School of Engineering and Mines. The mission of the School includes engineering programs being accredited by the Accreditation Board for Engineering and Technology (ABET).

ACCREDITATION OF ENGINEERING PROGRAMS

The Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET) has accredited the following University of North Dakota curricula: Chemical Engineering, Civil Engineering, Electrical Engineering, Geological Engineering, and Mechanical Engineering. Accreditation identifies professional engineering curricula that provide a solid education upon which to base engineering practice. ABET serves the public through the promotion and advancement of engineering, technology and applied science education.

ABET represents 19 engineering societies, including the American Institute of Chemical Engineers, the American Institute of Mining, Metallurgical & Petroleum Engineers, the American Society of Civil Engineers, the American Society of Mechanical Engineers, the Institute of Electrical and Electronics Engineers, Inc., and the National Society of Professional Engineers.

State Boards of Registration governing the practice of professional engineering allow a student who is completing an ABET-accredited engineering curriculum to take the Fundamentals of Engineering (FE) examination. Engineer-In-Training certification is granted only after graduation from an accredited curriculum and passing the FE examination. Graduates who have earned Engineer-In-Training certification may complete the professional practice examination after four years of engineering experience acceptable to the state board of registration in the state in which they seek registration as professional engineers.

DEGREES

The following baccalaureate degrees are conferred upon engineering students who have successfully completed the prescribed courses of study and who have complied with all the other requirements established by the University, including the General Education Requirements for engineering students as listed later in this section: Bachelor of Science in Chemical Engineering, Bachelor of Science in Civil Engineering, Bachelor of Science in Electrical Engineering, Bachelor of Science in Geology, Bachelor of Science in Geological Engineering, and Bachelor of Science in Mechanical Engineering. The School of Engineering and Mines also offers a Bachelor of Science in Environmental Geosciences. A Bachelor of Science degree in Geology is taught in the School, but the degree is awarded through the College of Arts and Sciences.

An aerospace option/emphasis is offered through both the electrical engineering and the mechanical engineering programs. The objective of these programs is to prepare graduates for professional engineering practice while simultaneously preparing licensed pilots with an aerospace background.

A cooperative program with the University of Manitoba at Winnipeg is available for engineering students interested in receiving a bachelor’s degree in computer engineering. Students study for one year at the University of North Dakota and complete the last three years at the University of Manitoba. Further information is available in the Engineering Dean’s Office.

Graduate Study. Graduate work, offered by departments in the School of Engineering and Mines lead to the degrees of Master of Engineering with majors in chemical engineering, civil engineering, electrical engineering, environmental engineering and mechanical engineering; Master of Science with majors in chemical engineering, electrical engineering, environmental engineering, geology, and mechanical engineering; and Doctor of Philosophy with majors in engineering and geology. Admission to graduate work in the various departments may be granted to a student upon the recommendation of the Dean of the Graduate School and the chair of the department in which the study will be undertaken. For admission to the Doctor of Philosophy with a major in engineering, the recommendation of the Director of the Engineering Graduate Program Committee is required. Prospective graduate students should familiarize themselves with the material listed in the Graduate School section of this catalog.

MINOR IN ENGINEERING SCIENCES

A minor in engineering sciences is available to non-engineering students, and has a requirement of 20 credit hours as detailed below:

Required Courses - 12 credits
- Engr 204 ………… Statics .............................................................. (3)
- EE 206 …………… Circuit Analysis ………………………………………….. (3)
- Engr 202 ………….. Dynamics ........................................................... (3)
- Engr 203 …………… Mechanics of Materials ………………………………… (3)
- CE 306 …………… Fluid Mechanics ………………………………………… (3)
- or ME 300 ………….. Fluid Mechanics ……………………………………… (3)
- or ME 341 ………….. Thermodynamics …………………………………….. (3)
- Electives …………………………………………………………………… (8)

Any regularly offered course at the 200 or higher level with the prefix Engr, CE, EE, GE or ME may be used as an elective. Further information is available in the Engineering Dean’s Office.

ADMISSION POLICY

Admission to the University and the School of Engineering and Mines. Students planning to receive a baccalaureate degree in engineering must be enrolled in the School of Engineering and Mines. They will be admitted to the University and to the School of Engineering and Mines through the Office of Admissions. Application forms and information regarding enrollment and transferring may be obtained from that office. Students transferring to the School of Engineering and Mines from another college within the University or from another institution must have a Grade Point Average (GPA) of at least 2.00. Students planning to seek a baccalaureate degree in a non-engineering topic simply follow campus admission policies.

A student is admitted to a professional engineering degree program through a formal admission process conducted when the student is completing the second year of engineering study and prior to being allowed to take upper division engineering courses. Only students admitted to a professional engineering degree program will be eligible to receive engineering degrees.

Engineering Degree Program Admission Standards. All of the professional engineering degree programs require that the following conditions be met prior to admission:

1. A minimum grade of C must be earned in each of the following foundation courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
<th>UND Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Chemistry</td>
<td>4</td>
<td>Chem 121 and 121L</td>
</tr>
<tr>
<td>English Composition</td>
<td>6</td>
<td>Engl 110 and 125 or 120</td>
</tr>
<tr>
<td>Calculus</td>
<td>12</td>
<td>Math 165 and 166 and 265</td>
</tr>
<tr>
<td>General Physics</td>
<td>8</td>
<td>Phys 251 and 252</td>
</tr>
</tbody>
</table>

An additional science course which may be prescribed by each admitting department.
At least four engineering science courses or acceptable equivalents prescribed by each admitting department.

(2) A GPA of at least 2.00 must be maintained in all engineering courses taken to date.

Engineering Degree Program Application Procedures. Application forms may be obtained directly from the program/department of interest or the Office of Admissions or the Dean’s Office in the School of Engineering and Mines. Application for admission may be made to only one degree program at a time.

Transfer students may apply for admission to an engineering degree program concurrently with application to the University. Any admission to an engineering degree program in such a case will be contingent upon admission to the University. It is advisable for transfer students to contact the engineering department of interest for an evaluation of the comparable and approved coursework from other institutions that will meet the School of Engineering and Mines’ requirements.

Engineering Degree Program Application Deadlines. Students will apply for admission to a professional degree program during the term in which they are completing the foundation coursework (normally the fourth semester). Applications should normally be received by March 1. Applications are usually reviewed once per year, but may be reviewed at other times as positions are available.

Notice of admission status will normally be mailed by April 1.

Selection and Admission Process for Engineering Degree Programs. If the number of applications for admission exceed the number of spaces available in a degree program, admission will be on the basis of program criteria that include:

1. the GPA earned in the foundation courses and all other engineering courses completed during the time of application for admission
2. additional admission criteria as specified by each program

Two types of admission will be granted. Those students who are enrolled in the remainder of their foundation courses at the time of application will receive conditional admission. Final admission for those students depends on earning a minimum grade of C in those foundation courses completed during the semester of application. Final admission may be granted directly if the student has completed all the foundation courses satisfactorily and met the degree program’s admission criteria.

Additional students may be admitted to an engineering degree program at other times if positions become available and interim admissions are allowed. Except under special circumstances, these additional students must be enrolled at the University of North Dakota.

Only those students who have received final or conditional admission status will be allowed to preregister for upper division engineering courses. Final admission status must be granted for actual enrollment in upper division engineering courses to occur.

Reaplication Procedure. Non-admission to any degree program may be appealed through the School of Engineering and Mines Program Appeals Committee.

Reaplication may be made during the next application session.

ACADEMIC AND ENROLLMENT POLICY

General. Students will not be allowed to re-enroll in an engineering course which they have unsuccessfully completed until the second time the course is offered following their first enrollment, unless space is available. Unsuccessful completion is defined as either withdrawal after the last day to add (typically the tenth day of classes) or failure to achieve an acceptable grade.

No more than one unsuccessful completion will be allowed for any engineering course.

A minimum 2.00 overall GPA, 2.00 UND GPA, and 2.00 GPA for UND engineering courses in each degree program is required of all students in engineering. If any of these GPAs drop below 2.00, the student is placed on probation for one semester. Upon completion of the probation semester the minimum GPA requirements must be satisfied.

Students who have been admitted to a professional degree program, in addition to meeting stated requirements, will be allowed no more than a total of four unsuccessful completions in courses specified in the program of study.

Dismissal. Dismissal from the School of Engineering and Mines will result when any of the above policies are not met.

For a student wishing to return to the School of Engineering and Mines following dismissal, an Application for Reinstatement must be submitted to the appropriate department. No student will be reinstated within one calendar year of dismissal from the program, and reinstatement may be on a space-available basis.

A denial of reinstatement may be appealed to the School of Engineering and Mines Program Appeals Committee.

APPEALS. Appeals of the Dean’s decisions, and all appeals regarding admission and reinstatement, are heard by the School’s Program Appeals Committee, which is composed of one faculty member from each department and three student representatives.

GRADUATION REQUIREMENT

A student in Engineering must obtain a 2.0 overall Grade Point Average and a 2.0 GPA for engineering courses required in the School of Engineering and Mines to satisfy graduation requirements for a degree from the School of Engineering and Mines. A student who transfers to the University of North Dakota from another college or university must also attain a 2.0 GPA for work taken at the University of North Dakota.

COOPERATIVE EDUCATION

The programs offered by the School of Engineering and Mines prepare students for entry-level professional practice. Since career-related work experience is a valuable adjunct to the academic programs, students are encouraged to participate in the cooperative education program offered through Career Services. Students who participate in the cooperative education program are usually placed in para-professional positions in industry or government, gaining valuable working experience while seeing practical applications of the subjects in their academic studies. In addition, students can increase their understanding of career choices available in their professional fields while gaining valuable experience. Students may be able to earn academic credit for their co-op experience.

GENERAL CURRICULUM IN ENGINEERING FIRST AND SECOND YEARS

The first year of the general curriculum permits a student to continue in any engineering degree program with little modification to his/her departmental program. Students who complete the third or the fourth semester of the general curriculum are required to modify their programs from those listed by their department but can, by proper scheduling, complete their degree requirements at the end of eight full semesters. Students who have not decided upon an engineering department should take the course of studies outlined in the general curriculum until they have made a departmental choice, at which time they should obtain departmental counseling on their academic program.
### FRESHER YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 121, 122</td>
<td>General Chemistry I, II (4)</td>
</tr>
<tr>
<td>Engr 110</td>
<td>College Composition I (3)</td>
</tr>
<tr>
<td>Engr 101</td>
<td>Graphical Communications (3)</td>
</tr>
<tr>
<td>Math 165, 166</td>
<td>Calculus I, II (4)</td>
</tr>
<tr>
<td>Phys 251, 251L</td>
<td>University Physics I (4)</td>
</tr>
</tbody>
</table>

### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engr 201</td>
<td>Statics (3)</td>
</tr>
<tr>
<td>Engr 202</td>
<td>Dynamics (3)</td>
</tr>
<tr>
<td>Engr 203</td>
<td>Mechanics of Materials (3)</td>
</tr>
<tr>
<td>Econ 201</td>
<td>Principles of Economics I (3)</td>
</tr>
<tr>
<td>EE 206</td>
<td>Electrical Circuits (3)</td>
</tr>
<tr>
<td>Engr 125</td>
<td>Technical and Business Writing (3)</td>
</tr>
<tr>
<td>(or Engr 120)</td>
<td>or College Composition II</td>
</tr>
<tr>
<td>Engr 200</td>
<td>Computer Applications in Engineering (3)</td>
</tr>
<tr>
<td>Math 265</td>
<td>Calculus III (4)</td>
</tr>
<tr>
<td>Math 266</td>
<td>Elementary Differential Equations (4)</td>
</tr>
<tr>
<td>Phys 252/252L</td>
<td>University Physics II (4)</td>
</tr>
</tbody>
</table>

Outlines for all four-year curricula are found in the Courses of Instruction section of the catalog. Students interested in ROTC programs should consult with their department chair and the Department of Military Science on curriculum options.

### GENERAL EDUCATION REQUIREMENTS

The University requires completion of 39 credits of General Education Requirements (see General Education Requirements listing). Students enrolled in all Engineering programs except Chemical must complete Philosophy 370, Ethics in Engineering and Sciences, and Economics 201, Microeconomics. All Engineering students should plan carefully the fulfillment of their university GER’s so that they are inclusive of these Engineering Program Requirements.

### COMBINED DEGREE PROGRAM

To encourage undergraduate engineering students to extend their studies to include a graduate degree, the School of Engineering and Mines has combined programs in Chemical, Civil, Electrical and Mechanical Engineering which permit students to earn both B.S. and M.S./M.Engr. degrees in an engineering discipline. This program allows students to designate two three-credit hour courses to count for both degrees.

- Students may be admitted to the Engineering Combined Degree Program after the completion of 95 credit hours towards the B.S. degree with a GPA of at least 3.0, and before completion of the B.S. degree.
- Completed applications must be received at the Graduate School by the deadline: One week after the start of classes.

A complete application includes:

- Graduate School application and application fee
- 3 letters of reference
- Statement of Purpose
- Program of Study - Engineering Combined Degree

The two three-credit hour courses designated for both degrees must not have been completed at the time of application and they must have graduate course standing.

- The student is admitted to the Graduate School on completion of 125 credit hours towards the B.S. degree with a GPA of 3.0 or higher.
- Students in the program may opt to be awarded their B.S. and M.S. degrees sequentially or at the same time.

### STUDENT ORGANIZATIONS AND PROJECTS

**Student Societies.** There are student chapters of each of the following professional and technical societies: American Institute of Chemical Engineers (AIChE), American Society of Civil Engineers (ASCE), Association of Engineering Geologists (AEG); Society of Energy Alternatives (SEA); American Society of Mechanical Engineers (ASME), Association of Undergraduate Geologists, Institute of Electrical and Electronics Engineers (IEEE), IEEE Computer Society, the Society of Manufacturing Engineers (SME) and the Society of Women Engineers (SWE).

**Honor Societies.** Eta Kappa Nu, Sigma Gamma Epsilon, and Tau Beta Pi are engineering or geology honor societies whose purpose is to recognize excellence in the scholarship.

**Engineers’ Student Council.** The Engineers’ Council of the University of North Dakota, founded in 1920, is a student organization representing all departments of the School of Engineering and Mines. Engineers’ Council, as a student chapter of the National Society of Professional Engineers (NSPE), is open to all engineering students. Its membership includes the vice president and one member of the student chapters of AIChE, ASCE, ASME, IEEE and SWE; the vice presidents of Eta Kappa Nu, Sigma Gamma Epsilon, and Tau Beta Pi; and the engineering student senator.

**Projects.** The School actively encourages students to participate in engineering projects to gain experience in team activities involving students from other disciplines. Examples of typical projects include the solar car, concrete canoe, AgCAM - remote sensing from the Space Shuttle, steel bridge, fuel cell car, robotics, and CubeSat - remote sensing from a satellite.

### DISTANCE ENGINEERING DEGREE PROGRAM

The Distance Engineering Degree Program (DEDP) offers baccalaureate degrees in chemical, civil, electrical and mechanical engineering via the Internet and on-campus laboratories. This program is offered in cooperation with the School of Engineering and Mines and the Division of Continuing Education at the University of North Dakota.

On-campus courses are recorded and the files are distributed to each student enrolled in DEDP. Through this program, students are able to complete their degree programs while taking the majority of their courses at their “home site.” Students are required to travel sometime during the summer months to the UND campus to complete the laboratory portions of their programs.

Students have opportunities to interact with faculty through phone, fax and E-mail. For further information please contact the Division of Continuing Education at 1-800-342-8230.
GRADUATE PROGRAMS AND DEGREES

<table>
<thead>
<tr>
<th>Program</th>
<th>Degrees Available</th>
</tr>
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<tbody>
<tr>
<td>Anatomy and Cell Biology</td>
<td>M.S., Ph.D.</td>
</tr>
<tr>
<td>Art (See Visual Arts)</td>
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<tr>
<td>Atmospheric Sciences</td>
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<tr>
<td>Aviation</td>
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<tr>
<td>Biochemistry and Molecular Biology</td>
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<tr>
<td>Biology</td>
<td></td>
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<tr>
<td>Business Administration</td>
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<tr>
<td>Career and Technical Education</td>
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<tr>
<td>Chemical Engineering</td>
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<tr>
<td>Chemistry</td>
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<tr>
<td>Civil Engineering</td>
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<tr>
<td>Clinical Laboratory Science</td>
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<tr>
<td>Communication</td>
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<tr>
<td>Communication Discourse</td>
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<tr>
<td>Communication Sciences and Disorders</td>
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<tr>
<td>Computer Science</td>
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<tr>
<td>Counseling</td>
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<tr>
<td>Counseling Psychology</td>
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<tr>
<td>Criminal Justice</td>
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<tr>
<td>Early Childhood Education</td>
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<tr>
<td>Earth System Science and Policy</td>
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<tr>
<td>Education — General Studies</td>
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<tr>
<td>Educational Leadership</td>
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<tr>
<td>Electrical Engineering</td>
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<tr>
<td>Elementary Education</td>
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<tr>
<td>Engineering</td>
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<tr>
<td>English Language and Literature</td>
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<tr>
<td>Environmental Engineering</td>
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<tr>
<td>Geography</td>
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<td>Geology</td>
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<td>History</td>
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<tr>
<td>Industrial Technology</td>
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<tr>
<td>Instructional Design and Technology</td>
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<tr>
<td>Kinesiology</td>
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<td>Linguistics</td>
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<tr>
<td>Mathematics</td>
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<tr>
<td>Mechanical Engineering</td>
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<tr>
<td>Microbiology and Immunology</td>
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<td>Music</td>
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<tr>
<td>Nursing</td>
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<tr>
<td>Occupational Therapy</td>
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<tr>
<td>Pharmacology, Physiology and Therapeutics</td>
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<tr>
<td>Physical Therapy</td>
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<td>Physician Assistant</td>
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<td>Physics</td>
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<td>Psychology</td>
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<tr>
<td>Public Administration</td>
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<td>Reading Education</td>
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<td>Secondary Education</td>
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<tr>
<td>(see Education-General Studies)</td>
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<tr>
<td>Social Work</td>
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<tr>
<td>Sociology</td>
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<tr>
<td>Space Studies</td>
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<tr>
<td>Special Education</td>
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<tr>
<td>Speech-Language Pathology</td>
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<tr>
<td>Teaching and Learning</td>
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<tr>
<td>Theatre Arts</td>
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</tr>
<tr>
<td>Visual Arts</td>
<td></td>
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</tbody>
</table>

Non-thesis option is available.

Non-thesis degree only.

ADDITIONAL INFORMATION

For detailed information students should consult the Graduate School Section of this catalog or address inquiries to the Dean of the Graduate School, Box 8178, University of North Dakota, Grand Forks, ND 58202; Telephone (701) 777-2784 or 1-800-CALL-UND.
The School of LAW
Candace M. Zierdt, Interim Dean

HISTORY AND MISSION
The School of Law, established in 1899, is a graduate professional school of the University which awards the Juris Doctor degree. The curriculum is designed for the full-time student and covers a period of three academic years. The School of Law is a member of the Association of American Law Schools and is accredited by the American Bar Association’s Section of Legal Education and Admissions to the Bar. The mission of the School of Law is to educate and train legal professionals in a program blending fundamental substantive law teaching with opportunities for practical application of legal theory. The law school focuses its resources on research and service to the State, its citizens and the legal profession. Graduates are entitled to admission to the bar in the jurisdiction of their choice upon successful completion of that jurisdiction’s bar examination.

PRE-LAW STUDIES
There is no prescribed pre-law curriculum. The law school student body typically includes representatives of nearly every undergraduate field of study. The faculty of the School of Law strongly recommends a broad and liberal undergraduate program which combines rigorous and creative thinking, careful and thorough analysis and substantial oral and written communication opportunities. The major should be a subject area which interests and stimulates the student.

ADMISSION
Applicants for admission to the School of Law must be candidates for or have received a bachelor’s degree from an accredited college or university and must have taken the Law School Admission Test. Admission is competitive. Applicants accepted for the 2002-2003 entering class had a median undergraduate Grade Point Average (GPA) of 3.31 and a median LSAT score of 150.

The School of Law has a rolling admissions policy: although the deadline for application and all supporting documentation is April 1 of the spring preceding entry, the applicants’ file is completed before deadline, it will be sent to the Admission Committee for consideration. Applications will be accepted after the April 1 deadline, but will be reviewed in the context of the number of students already admitted.

It is the policy of the School of Law to attempt to admit all qualified North Dakota residents seeking to enroll. Because a diverse student body provides the best medium for education, the School of Law encourages applications from all regions and all economic backgrounds, as well as from women and members of racial, ethnic, and religious minorities.

Students wishing to enter the School of Law should request an application packet from the Office of the Dean, School of Law, University of North Dakota, P.O. Box 9003, Grand Forks, ND 58202-9003. The University of North Dakota School of Law is a participating law school in the Law School Data Assembly Service. In order for the admission process to be completed by April 1 of each year, the applicant is strongly urged to make application directly to the School of Law the preceding fall.

Applicants for advanced standing may be admitted and given credit for satisfactory work completed in other accredited law schools, provided they otherwise comply with the admission requirements of the School.

STUDENTS IN OTHER COLLEGES OR SCHOOLS ELECTING LAW COURSES
The School of Law permits non-Juris Doctor degree candidates to enroll in law school courses on a limited basis. Undergraduate UND students will generally not be permitted to enroll in law school (JD curriculum) courses. UND graduate students may be permitted to enroll in law school courses rarely and only with the permission of the dean upon appropriate petition. Interested students should contact the School of Law for further information.

LIBRARY
The Thormodsgard Law Library of the School of Law has more than 304,000 volumes and equivalents, including 100,000 microform volumes and over 2,400 serial subscriptions. The facility is a research library designed to serve the legal resource needs of the students and faculty of the School of Law and of the University. In addition, the law library serves the practicing bar and citizens throughout the state of North Dakota and the northern plains region. The library subscribes to LEXIS® and WESTLAW® computer assisted legal research services.

ADDITIONAL INFORMATION
A separate catalog for the School of Law describing degree requirements, course offerings, financial aid and scholarships, student organizations and activities, faculty biographies, placement and other miscellaneous information may be requested from the office of the Dean, School of Law, University of North Dakota, P.O. Box 9003, Grand Forks, ND 58202.
The School of

MEDICINE AND HEALTH SCIENCES

H. David Wilson, M.D., Dean and Vice President for Health Affairs

HISTORY AND MISSION

The School of Medicine and Health Sciences consists of medical, biomedical research and other health-related academic components which work together to address our mission of educating and preparing North Dakota residents as physicians, medical scientists and other health professionals for service to the people of this region and the nation, and to advance medical and biomedical knowledge through research. These components include:

1. A statewide, four-year curriculum for medical students leading to the M.D. degree;
2. Postgraduate medical education programs of three to five years in duration (residencies) leading to eligibility for board certification in family medicine, internal medicine, general surgery and psychiatry; a one-year transitional program is also offered;
3. A continuing medical education program to address the career-long need of physicians and other health care personnel for continued learning;
4. Graduate programs in the biomedical sciences leading to the M.S. degree, Ph.D. degree, and combined M.D./Ph.D. degree in anatomy and cell biology; biochemistry and molecular biology; microbiology and immunology, and pharmacology, physiology and therapeutics;
5. Postdoctoral research training programs in the disciplines noted above;
6. Graduate programs leading to M.S. degrees in clinical laboratory science, occupational therapy, and physician assistant programs;
7. Undergraduate programs leading to the following degrees: B.S. in athletic training, B.S. in cytotechnology, B.S. in clinical laboratory science and B.S. in occupational therapy;
8. Undergraduate and graduate coursework in anatomy and cell biology; biochemistry and molecular biology; microbiology and immunology, and pharmacology, physiology and therapeutics;

Each program noted above is fully accredited by its accreditation agency.

The School of Medicine was established in 1905 and offered, until 1973, the first two years of medical education. Students transferred to other medical schools for the last two years of medical education to earn the M.D. (doctor of medicine) degree. During that time, the school established a strong reputation across the nation for the quality and professional attitude of its students, who were welcomed enthusiastically by other medical schools. In 1973, state legislative action approved a four-year curriculum and authorized the granting of the M.D. degree. This was accomplished in stages using a 2:1:1 plan by which students transferred to medical schools in Minnesota for their third year and returned to North Dakota to complete their final year before receiving the M.D. degree. In 1981 the third year was established in North Dakota, providing for a complete in-state medical education program.

The school also established a strong reputation during its early years, and continuing today, for the quality of research and training in the biomedical sciences. Today, the institution is nationally and internationally respected for its research and training programs in cancer, cardiovascular and renal disease, environmental health, metabolic diseases, alcohol and drug abuse, eating disorders and neuroscience.

The Physician Assistant Program, established in 1970, is administered by the Department of Community Medicine and Rural Health through its Division of Health Practitioners. In 1949, the medical technology program was initiated with a B.S. curriculum, adding a M.S. program in 1978. Medical technology is now known as clinical laboratory science. The occupational therapy program was initiated in 1956 as a part of the medical school. After being stationed in the College of Human Development (HRD) for a number of years, the department moved back into the medical school in 1995. The physical therapy program was initiated in 1968 and the M.S. degree in physical therapy was added in 1991. The doctoral program in physical therapy was initiated in 2002. The B.S. in Athletic Training degree was approved in September, 1990, by the North Dakota Board of Higher Education and is administered under the Department of Family Medicine through its Division of Sports Medicine.

In 1996, the name of the School of Medicine was changed to the School of Medicine and Health Sciences to reflect the importance of all components of the school in addressing its mission. Departments included are anatomy and cell biology; biochemistry and molecular biology; community medicine; family medicine; internal medicine; microbiology and immunology; neuroscience; obstetrics and gynecology; occupational therapy; pathology; pediatrics; pharmacology, physiology and therapeutics; physical therapy; radiology; and surgery. The statewide educational program of the school is coordinated through clinical campuses based at Bismarck, Fargo, Minot and Grand Forks.

The School of Medicine and Health Sciences issues a catalog biennially containing information on application to the medical school, including registration, fees, admissions, standards of scholarship, and courses. Interested students may write for the catalog or for other information to the Office of Student Affairs and Admissions, School of Medicine and Health Sciences, University of North Dakota, P.O. Box 9037, Grand Forks, North Dakota 58202-9037. Information is also available concerning all components of the School of Medicine and Health Sciences at: http://www.med.und.nodak.edu.

SUGGESTED UNDERGRADUATE COURSES FOR STUDENTS PLANNING TO STUDY MEDICINE

Four years of college preparation are recommended for students wishing to enter the medical education program of the University of North Dakota School of Medicine and Health Sciences, although a degree is not a requirement. The student is free to select a major in any area of interest, but must include the following mandatory credits:

<table>
<thead>
<tr>
<th>Minimum Semester Hours</th>
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| Chemistry, including laboratory ........................................ 16
| Inorganic and Qualitative ........................................... 8 |
| Organic* ......................................................... 8 |
| Biology, including laboratory ....................................... 8 |
| Physics, including laboratory ........................................ 8 |
| Psychology/Sociology .................................................. 3 |
| Language Arts (English, Speech, etc.) ............................. 6 |
| College Algebra or higher math .................................... 3 |

* A student may substitute a semester or quarter of biochemistry for the final semester/quarter of organic chemistry.
The University of North Dakota School of Medicine and Health Sciences recommends that students take elective courses that include subjects of liberal arts value such as humanities, economics, psychology and sociology so that the student’s educational experience will be broad and well-rounded. Computer literacy also is highly recommended. Students are urged to see their advisers regularly.

**Application for admission** to the School of Medicine and Health Sciences is available on July 1 and must be received no later than November 1 of the year preceding desired admission.

### UNDERGRADUATE PROGRAMS

#### Athletic Training

Students can pursue a Bachelor of Science degree in Athletic Training through the Division of Sports Medicine, Department of Family Medicine. This four-year degree is designed to prepare entry-level athletic training professionals. The academic program is currently accredited by CAATEP. Graduates are eligible to take the national certification test administered by the NATA Board of Certification Inc. Successful completion of this test allows the graduate to be called a “certified athletic trainer.” Application information and requirements are available from the Division of Sports Medicine.

#### Clinical Laboratory Science (CLS)

The Department of Pathology offers a four-year academic program leading to the degree of Bachelor of Science in Clinical Laboratory Science (formerly medical technology). The degree includes two years of pre-clinical laboratory science education followed by two years of professional coursework. Students may take much of the professional curriculum online through distance learning. Application for advancement to the professional education component must be made during the second semester of the sophomore year. The CLS program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAAACLS). Graduates of the program will be eligible to sit for several national certification examinations. In addition to certification, some states require licensure in order to practice; however, state licenses may be based on the results of the NBCOT certification examination.

#### Cytotechnology

The Department of Pathology offers a four-year, degree-granting program leading to the Bachelor of Science in Cytotechnology. The program has been fully approved by the AMA Board of Schools since 1967 and became a degree-granting program in 1975. Applications are available from the cytotechnology program director in the Department of Pathology, and must be submitted by January 1 for the senior-year program beginning the following Fall semester.

### GRADUATE PROGRAMS

Ph.D. and M.S. programs, and the joint M.D./Ph.D. program are offered in each of the biomedical science departments. Professional graduate programs are offered in physical therapy, physician assistant studies, and clinical laboratory science. All of these programs are described in the graduate school section of this bulletin.

#### Clinical Laboratory Science

The Division of Medical Laboratory Science in the Department of Pathology offers a Master of Science degree program in clinical laboratory science. The degree is a non-thesis option that is offered both on campus and through online distance learning. It provides a broad medical science background as well as experiences in quality management and laboratory finance. This curriculum is designed to prepare students for careers as administrative laboratory directors, clinical laboratory consultants, technical supervisors or laboratory educators.

#### Occupational Therapy

The Occupational Therapy Department offers a five and a half-year entry-level Master of Occupational Therapy (MOT) degree. Occupational Therapy as a profession is based on the belief that purposeful activity (occupation), including its interpersonal and environmental components, may be used to prevent and mediate dysfunction and elicit maximum adaptation. For information regarding the program, visit our web site at: [http://www.med.und.nodak.edu/depts/ot/home.htm](http://www.med.und.nodak.edu/depts/ot/home.htm).

The Occupational Therapy program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE). For information regarding accreditation, contact the ACOTE at (301) 652-2682, or 4720 Montgomery Lane, PO Box 31220, Bethesda, Maryland 20824-1220. All basic professional programs must comply with the *Standards for an Accredited Educational Program for the Occupational Therapist*, 1990. Graduates of the program will be eligible to sit for the national entry-level certification examination for the occupational therapist administered by the National Board for Certification in Occupational Therapy, Inc. (NBCOT, 800 South Frederick Avenue, Suite 200, Gaithersburg, MD 20877-4130; phone: 301-990-7979). After successful completion of this examination, the graduate will be an Occupational Therapist Registered (OTR). Many states require licensure in order to practice; however, state licenses may be based on the results of the NBCOT certification examination.

A satellite professional level MOT program is available at Casper College, Casper, WY. Tuition and other information regarding the program is available by contacting the Occupational Therapy Department at Casper College, Casper, WY, telephone 307-268-2541. Wyoming residents may call 1-888-699-0006.

#### Physical Therapy

The physical therapy curriculum is accredited by the American Physical Therapy Association. The six-and-one-half-year program leads to the degree of Doctor of Physical Therapy, a first professional degree.

Applications for admission to the professional program may be obtained from the Department of Physical Therapy after December 1, and must be returned by March 1 of the calendar year the student wishes to gain entrance into the professional program.

#### Physician Assistant Program

The Department of Family Medicine offers a master’s in Physician Assistant Studies. This 20-month graduate program is accredited by The Accreditation Review Commission on Education for the Physician Assistant, Inc. (ARC-PA). Enrollment is limited to registered nurses with a baccalaureate degree and a minimum of four years professional nursing experience. For additional information, or to request an application form, visit our web site at: [http://www.med.und.nodak.edu and click on “Physician Assistant Program.”](http://www.med.und.nodak.edu)

### OTHER ACTIVITIES

#### Laboratory Education for North Dakota

The Division of Medical Laboratory Science in the Department of Pathology instituted Laboratory Education for North Dakota (LEND) as a joint program with the Department of Microbiology and Immunology in 1978. It has been solely managed by the Division of Medical Laboratory Science since 1990. The LEND Program pro-
vides distance learning opportunities for laboratory professionals and physicians in all communities in North Dakota to earn continuing education units (CEUs), continuing medical education units (CMEs), undergraduate credit and graduate credit in clinical laboratory science through distance learning. Audio-teleconferencing, videotape, interactive television, Internet and self-instructional written materials are used to deliver the courses and programs. Students earning undergraduate and graduate credit can apply the credits earned toward degrees in clinical laboratory science.

Indians Into Medicine (INMED) Program

The INMED Program was adopted in 1973 to serve American Indians. Through a comprehensive recruitment program, INMED seeks to identify and encourage students with an aptitude for and an interest in health careers. This recruitment begins as early as the junior high school level. The program is committed to preparing professionals in all related health care fields. Each year the School of Medicine and Health Sciences allocates places in its first-year medical class to qualified American Indian students.

SCHOOL OF MEDICINE AND HEALTH SCIENCES’ FACILITIES

The School of Medicine and Health Sciences has facilities in Grand Forks (the administrative center of the school), Bismarck, Fargo and Minot. These regional campuses include family practice centers, library facilities and campus offices. Affiliations with private and public hospitals in the regional campus cities, but also in less populated cities throughout the state, provide the clinical base for the study of medicine and the other health sciences. In Grand Forks the school has completed construction of two additions to house the basic sciences departments, the Harley French Library of the Health Sciences, classrooms and offices at the north end of the campus at the site of what was formerly known as St. Michael’s Hospital. The new additions provide state-of-the-art research laboratories and learning space for programs in health sciences. In 2000, the Biomedical Research facility, an ultra modern animal facility was completed. It provides space for biomedical research.

NORTH DAKOTA MEDICAL CENTER

The Medical Center, created by an act of the Legislature of the State of North Dakota in 1945, is an administrative unit of the university. Its purpose is to provide facilities for the “coordination, improvement, expansion, and unification of health and welfare activities of the State, its agencies, its political subdivisions and its private practitioners.” The center is “concerned with the training of physicians, nurses and all other personnel concerned with the improvement and preservation of the health of the people of North Dakota.”

The Medical Center includes the School of Medicine and Health Sciences and the USDA Human Nutrition Research Center.

The College of Nursing

HISTORY AND MISSION

Baccalaureate education in nursing began at UND in 1949 with the College of Nursing being founded in 1959. In 1996 the programs in nutrition and dietetics joined the College. The College of Nursing now offers professional programs in nursing and nutrition and dietetics. Undergraduate degrees are offered in nursing, community nutrition, and dietetics. Graduate specializations within the masters program include: nursing therapeutics, anesthesia nursing, health care administration, psychiatric and mental health nursing, and family nurse practitioner preparation. The Ph.D. in nursing focuses on research with vulnerable and diverse populations.

The baccalaureate program in nursing provides students a background in liberal education preparation in all basic areas of clinical nursing practice, and a solid foundation for graduate education. Graduates of the program are eligible to sit for the national licensing examination for registered nurses (NCLEX-RN).

The baccalaureate program in dietetics, offered as a coordinated program, combines academic preparation with supervised practice experiences for students who wish to become registered dietitians (RD). Upon completion of this degree, graduates are eligible to take the examination for professional registration. A degree in community nutrition is also available.

The mission of the College of Nursing is to educate individuals for professional roles in nursing and nutrition. The College strives to enhance the health of people in the region by preparing leaders in nursing and nutrition through innovative, accessible programs, and significant faculty and student scholarship and service.

The College is committed to fostering critical thinking and intellectual inquiry in a caring environment that assumes a positive regard for others and that affirmatively supports and promotes diversity. Students are encouraged to be self directed and participatory learners and to commit themselves to learning as a life-long process that is essential to meeting the needs of society in a constantly changing environment. The College has a distinctive responsibility to provide distance learning opportunities for access to the master’s degree program.

The College promotes improvement of nursing and health care through the conduct and dissemination of research and scholarship regionally, nationally, and internationally. The College further contributes to the well being of society through the participation of faculty, students, and graduates in service activities concerned with the quality of nursing and health care. The College of Nursing has a particular commitment to advancing the quality of health care in North Dakota.

ACCREDITATION

The Coordinated Program in Dietetics is accredited by the Commission on Accreditation for Dietetics Education of the American Dietetic Association.

The graduate and undergraduate nursing programs are approved by the State Board of Nursing and accredited by the Commission on Collegiate Nursing Education. The nurse anesthesia program is accredited by the Council on Accreditation of Nurse Anesthesia Educational Programs.

DEGREES AND REQUIREMENTS FOR GRADUATION

The College of Nursing offers the following degrees to students who successfully complete the prescribed courses of study:
• Bachelor of Science in Nursing (B.S.N.)
• Bachelor of Science in Dietetics (B.S.D.)
• Bachelor of Science in Community Nutrition (B.S.C.N.)
• Master of Science (M.S.)
• Doctor of Philosophy (Ph.D.)

All students graduating from the College of Nursing will complete all requirements of the program of the student’s major and all graduation requirements of the University. In addition, the programs within the College of Nursing have minimum grade point averages which must be maintained.

LICENSING

Many nursing and nutrition licensing boards may not grant a license to practice if one has been convicted of a felony, and in some cases, a misdemeanor. Those with questions in this regard are encouraged to consult with the licensing board in the appropriate state prior to applying for admission to a program.

NURSING PROGRAM

Students who wish to pursue an undergraduate degree in Nurs-
ing should apply to the University to be admitted as pre-nursing majors in the College of Nursing. All persons who wish to apply for admission to the undergraduate nursing major are advised to follow the suggested curriculum leading to the Bachelor of Science in Nursing (see College of Nursing listing). Since the College of Nursing strives to reflect current trends in the nursing profession, there may be ongoing changes in the curriculum.

Functional Ability. Undergraduate students must possess the functional ability to perform in each of the following categories: gross motor skills, fine motor skills, physical endurance, physical strength, mobility, hearing, visual, tactile, smell, reading, arithmetic competence, emotional stability, analytical thinking, critical thinking skills, interpersonal skills, and communications skills. It is recognized, however, that degrees of ability vary widely among individuals. The policy, Functional Ability Requirements for Undergraduate Nursing Students & Common Activities/Tasks Required in the Nursing Profession, can be accessed on the College of Nursing Internet site at: http://www.und.nodak.edu/dept/nursing under “B.S. in Nursing” or is available on request. Individuals with questions about abilities should contact the Director of Student and Alumni Affairs at the College of Nursing.

Standard Admission to the Undergraduate Nursing Program. Students must complete a formal application to the College of Nursing and be approved for admission by the College before enrolling in the nursing curriculum. To be eligible for consideration for admission to the nursing major, the student must have: completed 24 semester hours of credit, including general chemistry, organic and biochemistry, human anatomy, introduction to psychology, introduction to sociology (cultural anthropology or social problems) may be taken in place of introduction to sociology), and a course in English composition; have earned at least a 2.50 overall and UND GPA; have earned a grade of “C” or better on English composition, organic and biochemistry, psychology, sociology (or cultural anthropology or social problems), and anatomy. The College also requires a personal essay designed to provide the admissions committee with additional information. The College will award additional points for a student who qualified for admission within the last two years, but was not admitted. College Level Examination Program (CLEP) subject exam results will be accepted according to current university policy.

Early Admission to the Undergraduate Nursing Program. Students who have attained a 3.50 grade point average or higher may wish to consider an early application for admission. To qualify, students must: have a 3.50 or higher overall grade point average, have earned credit in one chemistry course, and have attained a B grade or better in two out of three of the following: Introduction to Psychology, English Composition, or Introduction to Sociology (Cultural Anthropology or Social Problems are alternates to Introduction to Sociology). Once a student is provisionally accepted under the early admission process, they must show evidence of successful completion of the standard admission requirements by June 15th (see above). The early admission process also includes a written essay.

The nursing program admits students in March (early admission) and June (standard admission) to fill the fall and spring classes. In the event of vacancies for the spring classes, a December/January review will be held. The application deadline is February 1 for early admission consideration (for fall class only), April 1 for standard admission (for fall or spring admission) and November 1 for spring admission (only if vacancies exist).

The number of students admitted is determined by the availability of faculty and clinical facilities. Selection is made on the basis of academic record and submission of the required essay. Contact the College of Nursing Director of Student and Alumni Affairs or your adviser for the specifics of the selection process and procedures.

Students may petition to establish credit through special examinations according to University policy. Equivalency of courses (e.g., sciences) on other campuses with those at UND should be verified by contacting the College of Nursing as early as possible.

Admission of Transfer Students. Students seeking to transfer to the College of Nursing from other accredited institutions are advised to correspond with the College of Nursing before applying for admission to the University of North Dakota. Because of the number of applicants, students cannot be guaranteed admission to the nursing major.

Transfer students who plan to enter the nursing major must fulfill the same minimum prerequisite requirements as current University of North Dakota students. All qualified students are considered on merit. The dates for submission of the application and consideration of applicants are the same for all students.

Registered Nurses (RNs) and Licensed Practical Nurses (LPNs). RNs and LPNs interested in pursuing a bachelors degree are considered for admission as transfer students. An upper division RN/BSN completion track which builds upon previous learning is available through distance education for part-time or full-time students. Further information concerning the progression of the RN/LPN student can be obtained by contacting the College of Nursing. Transcripts of previous academic work must be submitted as part of the application to the University and to the nursing program.

The University of North Dakota College of Nursing is a member of the Agassiz Region Nursing Education Consortium (ARNEC).

Additional Expenses. In addition to the regular university tuition and fees, nursing students are charged a nursing program fee each semester. Costs of laboratory tests and immunizations required for the protection of the student and client, e.g., TB skin test, hepatitis vaccination, and health care insurance costs are the responsibility of the student. There are additional expenses related to uniforms and clinical equipment, graduation, and licensure. An estimated expense sheet is available at the College of Nursing.

Students are responsible for transportation related to clinical experience. Use of a car, especially for parent-child and community health nursing is necessary. Students may complete the practicum course at a distant site. There are travel and housing costs associated with that affiliation.

Students in the nursing program are eligible to apply for federal nursing student loans and/or North Dakota State Nursing Scholarship/Loans and institutional grants.
SCHOLARSHIPS

Each year, nursing majors may apply for College of Nursing scholarships. Awards and criteria are listed in the College of Nursing Undergraduate Student Handbook. Selection is based on a variety of factors including GPA, financial aid, interest, and nursing ability. Additional information is available from the department.

COOPERATIVE EDUCATION

Cooperative education experiences are offered through the College to students who have completed sophomore level nursing courses. Students have the opportunity to perform skills learned in prior and concurrent nursing courses while under the guidance of agency staff. Students can increase their understanding of specific specialty areas within nursing. Each learning/work experience is evaluated according to the student’s prior academic and work experiences and the needs of the employing agencies.

STUDENT ORGANIZATIONS

College of Nursing Student Council: The College of Nursing supports a student council that represents the students within the university student governance.

Nursing Student Association: NSA is the nursing student’s pre-professional organization. UND-NSA is affiliated with the North Dakota Student Nurses Association and the National NSA.

Nursing Honor Society: Eta Upsilon is the UND chapter of Sigma Theta Tau, the international honor society for nursing. Sigma Theta Tau fosters excellence, scholarship, and leadership in nursing to improve health care worldwide.

GRADUATE STUDIES

The College of Nursing offers graduate coursework leading to a Master of Science degree with a major in nursing and a Doctor of Philosophy in nursing. Students interested in graduate study may contact the Director of Graduate Studies in the College of Nursing or consult the Graduate School section of this catalog for further information.

NUTRITION AND DIETETICS

Students are assigned to an adviser in the Department of Nutrition and Dietetics at the time of admission to the university if the student has declared a Pre-Dietetics or Community Nutrition major. Majors within the department are advised to follow the appropriate suggested curriculum leading to either a Bachelor of Science in Dietetics or a Bachelor of Science in Community Nutrition (see department listing). There may be on-going changes in the curriculum since the Department of Nutrition and Dietetics strives to reflect current trends in the profession.

COORDINATED PROGRAM IN DIETETICS

Admission to the professional phase of the Coordinated Program in Dietetics. Application to the professional component of the Coordinated Program in Dietetics will be placed on probation if performance evaluations are unsatisfactory, if the grade point average drops below 2.6 or if a grade of less than a “C” is earned in any course. Dietetic program faculty will meet with the student to discuss the probationary status and develop plans to correct the deficiency. All deficiencies must be removed before advancing to the next semester of the program. If deficiencies remain more than one year, the student must complete a re-acceptance application. Re-acceptance into the program will be on the basis of space availability.

Additional expenses. The professional phase of the program has additional expenses due to supervised practice experiences, travel and professional activities. Additionally, the schedule of classes and supervised practice experiences must have precedence in planning other time commitments, thus limiting employment opportunities. Definite plans for financing the costs of the two years of the professional phase should be arranged prior to application. An estimate of expenses is available from the Department of Nutrition and Dietetics. Financial aid and scholarships are available from various sources. The UND Financial Aid Office can assist in determining which resources are available to individual students.

COMMUNITY NUTRITION

The community nutrition curriculum is designed to allow students to develop an in-depth understanding of nutrition based on the biological and social sciences; the ability to communicate nutrition principles effectively and accurately to the public; and the ability to participate as a team member with other community and health care professionals. Graduates will be skilled in conducting community nutrition assessments, identifying problems, developing and conducting effective interventions and collaborating with other professionals involved to improve the overall health of individuals and communities.

Students majoring in community nutrition select from two options. A graduate who completes N&D 441, Advanced Nutrition, is eligible to become a licensed nutritionist (L.N.) in the state of North Dakota.

Progression requirements. The student must earn a grade of “C” or better in all nutrition, food and science courses taken to fulfill requirements of the community nutrition major and must maintain an overall grade point average of at least 2.2.

MINOR IN NUTRITION

Students in other majors may elect to earn a minor in nutrition. The requirements of the minor are the completion of 20 semester hours of credit in nutrition-related courses. To develop the program of study, students must consult an adviser in the Department of Nutrition and Dietetics.
SCHOLARSHIPS
Students may apply annually for awards and scholarships offered within the Department of Nutrition and Dietetics. Various professional organizations also offer competitive scholarships. Information regarding eligibility and application guidelines may be obtained from the department.

COOPERATIVE EDUCATION
The opportunity to develop individualized cooperative education experiences is offered to students in the Department of Nutrition and Dietetics. This experience allows students to integrate learning from didactic courses with professional work experiences in nutrition and dietetics.

STUDENT ORGANIZATIONS
Student Association of Nutrition and Dietetics (SAND). SAND is the student association for all majors within the Department of Nutrition and Dietetics. Information regarding SAND may be obtained from its officers or from the faculty or staff in the department.

College of Nursing Student Council. The College of Nursing supports a student council that represents the students within the University student governance, including students with majors in the Department of Nutrition and Dietetics.

The Office of
STUDENT ACADEMIC SERVICES

HISTORY AND SCOPE
The Office of Student Academic Services was originally founded in 1955 as University College, an academic unit which enrolled all freshman students, whether or not they had decided upon a specific major. Today, the Office of Student Academic Services provides students who have not decided on a major the opportunity to adjust to their environment, to measure their abilities, and to discover their special interests. After deciding on a major students will advance to one of the University’s seven colleges and schools which offer undergraduate degrees. These include the John D. Odegard School of Aerospace Sciences, College of Arts and Sciences, the College of Education and Human Development, the School of Engineering and Mines, the School of Medicine and Health Sciences, and the College of Nursing.

ADMISSION AND ACADEMIC ADVISING
As soon as new students who have not decided on a major have been admitted to the University, their data sheet and transcript are forwarded to the Office of Student Academic Services. The Office of Student Academic Services has the responsibility for housing the records of all undecided students and for assigning each to an appropriate academic adviser. All students who have not decided on a major should meet with their adviser on a regular basis and should consult with their adviser preceding enrollment in classes each term.

TRANSFER TO A DEGREE COLLEGE
When a student decides upon an academic major, the records of the student are advanced to the appropriate four-year, degree-granting college.

To declare a major and advance their records, the student must call or go to the office of the college which grants the degree the student wishes to pursue. The new college will request records from Student Academic Services.

PROGRAM PLANNING
In most cases the University recommends that a student’s first year be devoted to broad preparation for later specialization. This is particularly important for the undecided student, who may wish to test his or her capacities and interests in various directions before making a final decision about a major field of concentration.
“GETTING STARTED”
FRESHMAN REGISTRATION PROGRAM
The Office of Student Academic Services conducts a special summer registration program each year to allow incoming freshmen the opportunity to arrange their fall semester class schedules and learn about the University. This procedure allows each student to obtain individual attention from academic advisers. Students accepted for admission to the University are invited to participate in the Getting Started Program. Appointments are required and can be scheduled by contacting the Office of Student Academic Services.

SUMMER SESSION

SCOPE
Summer Session is an integral part of the academic program at the University of North Dakota. Both undergraduate and graduate courses are taught during the twelve-week Summer Session. In addition to regular classes, special classes, programs, field trips, workshops, conferences, and other short-term activities are conducted.

More than 200 faculty, as well as distinguished visitors, contribute to a quality educational program during the Summer Session. All facilities of the UND campus — including libraries, galleries, music facilities, theatres, lecture halls, dining rooms, and residence halls — are utilized by students attending the Summer Session.

SUMMER SESSION STUDENT BODY
Summer course offerings are for everyone, from juniors in high school to senior citizens. During the Summer Session, courses are offered for students who have completed their junior year in high school and wish to get an early start toward earning college credit. Other typical groups of students found on campus during the summer include: teachers and administrators working toward advanced degrees, students from other colleges, freshman students beginning their academic courses, adults updating their educational backgrounds, professionals wishing to work toward certification, and students wishing to accelerate completion of their degree programs.

SUMMER SESSION SCHEDULE
The twelve-week Summer Session allows students to register for a wide variety of courses which meet for various lengths of time during the Summer Session. In some instances courses may be taught in sequence. Normally, a student will not be allowed to enroll in more than 15 semester hours during the twelve-week Summer Session.

Special dates are provided in the Summer Session Time Schedule of Classes.

CLASSIFICATION OF SUMMER SESSION STUDENTS
Full-Time Undergraduate Student. A full-time Summer Session undergraduate student is one who has been admitted to the University and is enrolled in a minimum of nine credit hours during the twelve-week Summer Session.

Part-Time Undergraduate Student. A part-time Summer Session undergraduate student is one who has been admitted to the University and is enrolled for fewer than nine hours of credit during the twelve-week Summer Session. A student must be enrolled in a minimum of one semester hour to be within this part-time classification.

ADDITIONAL INFORMATION
For detailed information on the summer program, students should consult the Summer Session Bulletin/Time Schedule of Classes, which is published in the spring of each academic year and provided on the UND home page at www.und.edu, or contact the Summer Session Office, University of North Dakota, P.O. Box 8375, Grand Forks, ND 58202-8375.
Undergraduate Departmental Courses, Programs

This section of the catalog includes, in alphabetical order, department and program area requirements and course descriptions.

The University publishes an official timetable of classes before the beginning of each academic term. It lists the class period, building, and room assigned to each course offered that semester or summer session. On request to Enrollment Services, a copy of the timetable will be mailed.

ENROLLMENT RESTRICTIONS

Enrollment in some University of North Dakota classes is restricted to students who have been admitted into specific major concentrations, who have completed specific classification status, or who have completed course prerequisites. In some high demand areas, not all students who request a particular course may be admitted in a given semester because of staffing or other University limitations. Generally, the University registers undergraduate students in order of their classification; nevertheless, the University does not guarantee that a student will be able to enroll in a specific course during any given semester.

COURSE NUMBERS

Courses numbered in the 100s are intended primarily for freshmen; in the 200s for sophomores; in the 300s for juniors; in the 400s for seniors and in the 500s for graduates.

The numbers 199, 299, 399 and 499 are reserved for Honors Program Courses.

CREDIT

All academic units are expressed in terms of the credit, which represents one class period of lecture or two hours of laboratory for each of the weeks that constitute a semester.

FREQUENCY OF OFFERINGS

The following symbols at the end of the course description indicate when and how often a class is usually available for registration.

F usually every Fall semester
S usually every Spring semester
SS usually every Summer session
F/2 usually every other Fall semester
S/2 usually every other Spring semester

Accounting
(Acct)

H. Wilde (Chair), Altepeter, Beard, Carlson, Dosch, Ellingson, Hansen, Harmeson, Hiltner, Loyland, Ness, and Wambganss

College of Business and Public Administration

The Department of Accounting has been preparing individuals for careers in business, including professional accounting, since 1927. Faculty have a long-standing tradition of interaction with a wide range of accounting professionals. Department faculty were instrumental in establishing the North Dakota Society of Certified Public Accountants.

Professional accountants face a variety of challenges and opportunities in their careers. To achieve success as a professional accountant, individuals must have a sound foundation in the liberal arts and sciences, a broad general understanding of business, a solid technical base in accounting, and a well developed ability to communicate in oral and written form. The accounting programs offered by the faculty provide the range of experience and knowledge needed for success as a professional accountant. The faculty’s programs also fulfill general University and College of Business graduation requirements.

Mission Statement

The mission of the Department of Accounting is to prepare individuals for professional careers in accounting and business.

Values Statement

Faculty value:
• Good relationships with our alumni and recruiters;
• Interaction with the profession and community;
• High standards of professional and ethical conduct;
• A climate that fosters continuous improvement.

Vision Statement

Faculty see a future where:
• The UND accounting program is recognized as the best and most innovative in the region;
• Employers look first to UND accounting students for qualified employees;
• Regional businesses and other organizations regularly seek out the accounting program for partnerships in meeting their educational, consulting and service needs;
• When the people of North Dakota think of accounting, they think of the University of North Dakota.

General Program Learning Goals

As a result of active participation in the Department’s program(s) of study, accounting students should:
1. Gain the confidence to pursue various accounting and business career opportunities.
2. Implement their acquired skills and knowledge whether in the pursuit of employment or graduate education, and in everyday personal and community life.
3. Be familiar with the terminology, concepts, principles, methods and procedures used in accounting and business.
4. Build the skills and knowledge to solve integrated and non-integrated business problems.
5. Be able to recommend and defend accounting policies and business strategies.
6. Appreciate and demonstrate the ability to communicate effectively, including written, oral and listening skills in both individual and group-work settings.
7. Appreciate and demonstrate analytical and critical thinking skills applicable to accounting and business.
8. Possess relevant software and computer skills useful for successful careers in the accounting and business environment.
9. Be aware of the ethical issues related to their chosen career path.

Program Specific Goals

**Bachelor of Accountancy (BAcc)**

As a result of selecting the BAcc degree option, students will:

1. Be provided the opportunity to acquire the knowledge and skills needed for a successful professional career in public accounting or in a related field where the CPA is desirable and/or demanded.
2. Be provided the opportunity to acquire the requisite knowledge and skills to become Certified Public Accountants (CPA).
3. Be provided an understanding of ethical behavior expected of accounting professionals in the practice of public accounting.

**Bachelor of Business Administration with a major in Managerial Finance and Corporate Accounting (BBA)**

As a result of selecting the BBA degree option, students will:

1. Be provided the opportunity to acquire the knowledge and skills needed for a successful career in accounting and/or managerial finance.
2. Be provided the opportunity to acquire the requisite knowledge and skills to become either Certified Managerial Accountants (CMA) or Certified Financial Managers (CFM).
3. Be provided an understanding of ethical behavior expected of accounting professionals in business.

In achieving this mission, faculty place the highest emphasis on teaching and learning. In addition, the importance of scholarly activities and service is recognized by faculty.

**Programs**

Accounting faculty offer two programs — the Bachelor of Accountancy (BAcc.) and the Bachelor of Business Administration with a major in Managerial Finance and Corporate Accounting (BBA), offered jointly with the Department of Finance. The B.Acc. program is designed for students interested in becoming Certified Public Accountants (CPA). The CPA is a national designation that requires passage of a qualifying examination. The requirements to sit for the CPA examination are governed by individual states (more about the CPA examination below).

The B.B.A., a joint program in finance and accounting, provides some flexibility for students to tailor their programs of study. As such, it is designed primarily for individuals interested in becoming a Certified Management Accountant (CMA) or a Certified Financial Analyst (CFA). Both the CMA and CFA are national designations that also require the passage of a national examination. Students have the option to emphasize either managerial finance or corporate accounting with the available electives.

**BACHELOR OF ACCOUNTANCY**

Required 126 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

1. General Education Requirements (see University GER listing).

**II. College of Business and Public Administration Requirements, see College listing and including:**

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</tr>
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</tr>
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</tr>
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<td>Assurance Services</td>
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<td>Acct 411</td>
<td>Business Income Taxation</td>
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</tr>
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<td>Acct 450</td>
<td>Contemporary Issues in Accounting</td>
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</tr>
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<td>Acct 312</td>
<td>Fund Accounting</td>
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</tr>
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<td>Acct 403</td>
<td>Contemporary Accounting Theory</td>
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**IV. Students must complete at least 90 semester hours of non-accouting courses.**

Accounting 218 and business law courses are not considered accounting courses for this requirement.

**B.B.A. WITH MAJOR IN MANAGERIAL FINANCE AND CORPORATE ACCOUNTING**

Required 128 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

1. General Education Requirements (see University GER listing).

**II. College of Business and Public Administration Requirements, see College listing and including:**

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THE CERTIFIED PUBLIC ACCOUNTANT (CPA) EXAMINATION

While the American Institute of CPAs writes the CPA examination, each state is responsible for establishing the requirements to use the CPA designation. According to North Dakota law and rules of the North Dakota State Board of Accountancy, individuals are currently eligible to sit for the Uniform Certified Public Accountant Examination with a bachelor’s degree that includes at least 24 hours of accounting and 24 hours of business courses and at least 150 semester hours of college courses.

The B.Acc. program meets the current requirements for accounting and business courses, however, the B.Acc. program does not meet the 150 hour requirement. Students interested in becoming CPAs should be prepared to either extend their undergraduate program by an additional 24 credit hours or to continue their study at the graduate level. At this time, the most likely graduate alternative would be the Master of Business Administration (MBA).

THE CERTIFIED MANAGERIAL ACCOUNTANT (CMA) EXAMINATION

The Institute of Management Accountants (IMA) establishes the standards or criteria for achieving the CMA designation. While the CMA examination is similar to the CPA examination, the CMA examination concentrates more heavily on corporate accounting and financial analysis.

THE CERTIFIED FINANCIAL ANALYST (CFA) EXAMINATION

The Association for Investment Management and Research (AIMR) establishes the standards and criteria for achieving the CFA designation. The CFA examination is very similar to the CPA examination except that the CFA examination is more focused on finance issues.

For more information regarding any of the above certifications, please visit the website of the sponsoring organization.

As a result of changing work conditions, both programs of study should be considered as minimums necessary for future success in the chosen designation.

Courses

200. Elements of Accounting I. 3 credits. Basic principles of the complete accounting cycle. F, S
201. Elements of Accounting II. 3 credits. Prerequisite: Acct 200 or Acct 275. Special emphasis on partnership, corporate accounting, and the uses of accounting information by managers. F, S
218. Computer Applications in Business. 2 credits. Prerequisite: Bsys 217. Permits or Corequisite: Acct 201. The fundamentals of digital computer programming using Electronic Spreadsheets with special emphasis on business applications. F, S
275. Accounting for Pre-MBA. 3 credits. No credit allowed to students who have completed Acct 201. Financial and managerial accounting concepts and practices oriented towards the decision maker. F, S
301. Intermediate Accounting I. 4 credits. Prerequisites: Acct 201 and 218. Concepts, time value of money, current assets, current liabilities, plant and equipment, and intangibles. F, S
309. Accounting Information Systems. 3 credits. Prerequisites: Acct 301. The application of systems design and use from the accountant’s perspective. Coverage includes computerized and manual accounting systems, elements of internal control, flowcharting, and the interface of accounting and management information systems. F, S
312. Fund Accounting. 3 credits. Prerequisites: Acct 201 and 218. Financial accounting, control, and reporting for governmental and not-for-profit entities. F, S
320. Accounting for Production. 3 credits. Prerequisites: Acct 201 and 218. Principles and techniques used to account for and analyze costs incurred to produce products or services. F, S
380. International Accounting. 3 credits. Prerequisite: Acct 201 and junior standing. Topics include comparative accounting systems, environmental influences on accounting, international financial statement analysis, foreign currency transactions, international standards harmonization, international taxation, transfer pricing, and multinational performance evaluation. S
397. Cooperative Education. 1-12 credits, may be repeated to a total of 12 credits. Prerequisites: Acct 301, 320. Minimum 2.0 GPA overall; approval of the Director of Accounting Cooperative Education. On the job compensated work experience in various areas of Accounting. S-U grading only. F, S, SS
401. Advanced Accounting. 3 credits. Prerequisites: Acct 302. Special problems in accounting including consolidated statements, partnerships, and foreign exchange. F, S
403. Contemporary Accounting Theory. 3 credits. Pre-or corequisite: Acct 401 or consent of instructor. A study of the emerging issues and the problems facing the accounting profession with special emphasis on the authoritative pronouncements as designated by the American Institute of CPAs and the Financial Accounting Standards Board. S-U grading not allowed. F, S
405. Assurance Services. 3 credits. Prerequisites: Acct 302, 309, Econ 210. Explores methods of improving the quality of information or its context for decision makers. Examples include audits, the reliability of financial statements, the processes and controls used to manage and operate businesses, assertions and agreements made to third parties, and regulatory compliance. F, S
406. Independent Assurance. 3 credits. Prerequisites: Acct 405 or consent of instructor. Auditing and assurance theory as applied by independent accountants. F, S
410. Federal Individual Income Tax. 3 credits. Prerequisites: Acct 201. Federal income tax relating to individuals to include the more complex tax situations. A computerized individual income tax preparation is used as a part of the course. F, S
412. Business Income Taxation. 3 credits. Prerequisites: Acct 302. Federal income tax relating to corporations and partnerships. Introduction to estate and gift tax and fiduciary income tax. F, S
418. Federal Individual Income Tax. 3 credits. Prerequisites: Acct 201. Federal income tax relating to individuals to include the more complex tax situations. A computerized individual income tax preparation is used as a part of the course. F, S
450. Contemporary Issues in Accounting. 2 credits. Prerequisites: Acct 302, 405. Corequisite: Acct 405. A critical analysis of contemporary issues in accounting. Written and oral presentations are required. F
451. The Literature of Accounting. 3 credits. Prerequisites: Acct 302, 405. Corequisite: Acct 405. A critical analysis of contemporary issues in accounting. Written and oral presentations are required. F

Business Law

315. Business in the Legal Environment. 3 credits. The legal environment of business, governmental regulation, contracts, and property. F, S
316. Business Law. 3 credits. Prerequisite: Acct 315. Commercial paper, secured transactions, business organizations, and liability of professionals. F, S
416. Advanced Business Law. 3 credits. Prerequisite: Acct 316. Advanced topics and contemporary issues in business law including ethics, legal representation in business, and the impact of selected governmental regulations on businesses. F, S

Anatomy and Cell Biology (Anat)

Carlson (Chair), Atkinson, Carr, Dunley, Grove, Hunt, Jackson, McCormack, Rada, Rieke, Ruit, and Smyser

Courses

204. Anatomy for Paramedical Personnel. 3 credits. Two lectures per week presenting a system-based study of the human gross anatomy. F, S
241L. Anatomy for Paramedical Personnel Laboratory. 2 credits. Laboratory exploration of human gross anatomy to complement Anatomy 204. Prerequisite or Co-requisite: Anat 204. F-S
496. Directed Studies in Anatomy. 1-3 credits (repeatable to a maximum of 6 credits). Supervised studies and/or laboratory experiences in morphology. F, S, SS
498. Internship in Anatomy. 1-15 credits (repeatable to a maximum of 15 credits). Prerequisite: Junior or Senior standing and approval of consent. In-depth study and/or laboratory experiences in morphology in fields of facility specialization. F, S, SS
Anthropology (Anth)

Leach (Chair), Mikulak, Pacilli, Scharf and Stubblefield

College of Arts and Sciences

An undergraduate major in anthropology can serve as the nucleus for a general liberal arts education, or as the prerequisite for a graduate education that will qualify a person for positions in (1) college and university teaching, (2) research, and (3) administrative and applied positions in government and museums. American anthropology is divided into four main sub-areas—archaeology, cultural anthropology, linguistics, and physical anthropology. Undergraduate training includes work in all four areas. Anthropology at UND is especially strong in archaeology and most students have an opportunity to work on archaeological excavations or in the laboratory. Both a major and a minor are offered in anthropology.

B.A. WITH A MAJOR IN ANTHROPOLOGY

Required 125 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. The Following Curriculum:

33 Major Credits including:

Anth 170 Introduction to Biological Anthropology (3)
Anth 171 Introduction to Cultural Anthropology (3)
Anth 172 Introduction to Archaeology and World Prehistory (3)
Anth 480 Senior Capstone Seminar (3)
Method and Theory (3)
3 hours from (Cultural) (9)

Anth 371 Cultural Dynamics (3)
Anth 372 Culture Theory (3)
3 hours from (Archaeology) (3)

Anth 380Archaeological Laboratory Methods (3)
Anth 380 Field Techniques in Archaeology (1-6)
Anth 380 Method and Theory in Archaeology (3)
Anth 401 Lithic Technology (3)
3 hours from (Physical) (3)

Anth 325 Human Origins (3)
Anth 330 Human Variation (3)
Anth 335 Primates (3)
Anth 374 Physical Anthropology Method and Theory (3)
Electives (12)

Required in other departments:

A concentration in a single supplementary field other than anthropology is also required of all anthropology majors. This concentration may be met in two ways: (1) a language proficiency of level IV in a modern foreign language; or (2) 20 credit hours, at least 9 of which must be numbered 300 or above, in any single subject matter taught at this university.

MINOR IN ANTHROPOLOGY

Required 21 credits including:

Anth 170 Introduction to Biological Anthropology (3)
Anth 171 Introduction to Cultural Anthropology (3)
Anth 172 Introduction to Archaeology and World Prehistory (3)
3 hours from (Cultural) (9)

Anth 100 Archaeological Laboratory Methods (3)
Anth 250 Human Origins (3)
Anth 335 Primates (3)
Anth 371 Cultural Dynamics (3)
Anth 372 Culture Theory (3)
Anth 378 Physical Anthropology Method and Theory (3)
Anth 380 Field Techniques in Archaeology (1-6)
Anth 388 Method and Theory in Archaeology (3)
Anth 426 Lithic Technology (3)
Electives in Anthropology (9)

Courses

100. Introduction to Anthropology, 3 credits. An introduction to the breadth of inquiry pursued by anthropologists, including the origins and biological evolution of humans, the prehistoric development of world cultures, and the interplay of biological, social, and cultural factors in present day societies. On demand.

170. Introduction to Biological Anthropology, 3 credits. An introduction to the field of biological or physical anthropology. This course will provide a general background in human evolutionary biology. F, S

171. Introduction to Cultural Anthropology, 3 credits. Examination of diversity and similarities across contemporary world societies. Topics: fieldwork and ethnographic description; theoretical approaches, communication/human language; interrelationships between environment, technology, social and political organization and worldview; sociocultural change; applied anthropology. Films and case studies illustrate intricacies of culture and how an anthropological perspective provides insights about our own society/culture. F, S

172. Introduction to Archaeology and World Prehistory, 3 credits. An introduction to 1) the basic field and laboratory methods used by archaeologists as they seek to describe and explain the events of world prehistory, and 2) the major milestones in the evolution of societies, including the cultural advancements of our earliest hominid ancestors, the three million year-long persistence of the hunting and gathering lifeway, the origins of agriculture, and the rise and collapse of civilizations. F, S

300. Special Topics, 1-4 credits. Repeatable when topics vary. F, S

325. Introduction to Archaeology and World Prehistory. 3 credits. Prerequisites: Anth 172 and permission of instructor. A hands-on introduction to the basic processing, organizing, and analytical techniques used in the archaeological laboratory. Excavated materials from prehistoric sites will be used for lab exercises and demonstrations. Includes lecture and lab. S

335. Culture Area Studies. 3 credits. Prerequisite: Anth 170 or consent of instructor. A description of the fossil evidence for primate and human evolution with an emphasis on the origins and evolution of the hominid and human lines. On demand.

330. Human Variation. 3 credits. An examination of the range of human physical variation, with a special emphasis on its adaptive nature. On demand.

335. Primates. 3 credits. A survey of the biology and behavior of the living primates, with a special emphasis on similarities and differences to humans. On demand.

340. Medical Anthropology. 3 credits. An examination of the human biological and cultural responses to health and disease as seen from an anthropological perspective. F, S

345. Forensic Science. 3 credits. An exposure to the basic methods and theoretical bases and interrelationships of the forensic sciences. On demand.

350. Language and Culture. 3 credits. Prerequisites: Anth 170, 171, or 172 or consent of instructor. Fundamentals of modern linguistics; utility of linguistic concepts of culture analysis; interaction of language with other cultural subsystems. F, S

371. Cultural Dynamics. 3 credits. Prerequisite: Anth 171. Focus on sociocultural change along a selected theme, such as "the local and the global," "ethnic minorities and nation-states," or "ethnographer as researcher and writer." Also considered are theoretical orientations in the study of society/culture, fieldwork, ethics, and anthropological roles with respect to public policy. F, S

372. Culture Theory. 3 credits. Prerequisite: Anth 171. An overview of the ideas and approaches that have played a role in the development of anthropological studies of societies and cultures. Focus on the contributions of major figures in anthropology, in the past and at present, as well as current issues within the discipline. Once every 3 semesters.

373. Indians of Latin America. 3 credits. Prerequisites: Anth 171. Examination of traditional and modern Indian cultures of Latin America. Focus on the adaptation to cultural change, the impact of world economy, and the impact of resource exploitation on indigenous peoples. Every third semester.

374. Old World Prehistory. 3 credits. Prerequisites: Anth 172. The growth and development of human culture in Africa, Asia, and Europe, from early prehistoric sites in these regions to the beginning of farming communities. Major archaeological sites will be critically examined and an interdisciplinary approach will be stressed. On demand.

376. The Aztec, Maya and Inca. 3 credits. Prerequisite: Anth 172. An examination of the high civilizations of Latin America with focus on the Aztec, Maya and Inca. Every third semester.

377. The Americas. 3 credits. Prerequisites: Anth 172 or consent of instructor. An examination of the cultural development of Mesoamerica, the development of agriculture, and the rise and fall of the Aztec Empire. On demand.

378. Physical Anthropology Method and Theory. 3 credits. Prerequisite: Anth 170. A discussion of current theoretical arguments within the field of physical anthropology and the techniques used to examine them. F, S

379. Culture Area Studies. 3 credits. May be repeated to maximum of 6 credits. A survey of peoples and cultures of selected areas. Selections based upon staff and student interest. F, S

380. Field Techniques in Archaeology. 1-6 credits. Prerequisites: Anth 172, and consent of instructor. S

388. Method and Theory in Archaeology, 3 credits. Prerequisites: Anth 170 or consent of instructor. This course explores how archaeologists reconstruct the past: how they formulate research problems and conduct field work; what field and laboratory analytical tools they employ; and how they use data, models, and theory to explain culture change. Techniques, methods, and theoretical frameworks used in modern prehis-
Art

Byun, Fink, Fundingsland, Luber, McCleery, Miller, Monsebroten, Paulsen, and Spiteri

The Art Department provides opportunities for both the potential professional practitioner and the appreciator to study in the various disciplines and media of the visual arts. The broad categories are: two-dimensional (drawing, painting, photography, printmaking), three-dimensional (ceramics, sculpture, fibers, metalsmithing), history of art, art education and study in computer/digital media. A core of study in the foundations of the visual arts is followed by the development of skills and technical knowledge in the various media. These are prerequisite to the ultimate objective of nurturing growth in conceptual ability and creative production. The award-winning struc
tures of the Edmund Hughes Fine Arts Center provides more than 35,000 square feet for specialized studios and opportunities for work in the various visual arts media.

The Art Department is an accredited institutional member of the National Association of Schools of Art and Design.

College of Arts and Sciences

B.F.A. WITH MAJOR IN VISUAL ARTS

The Bachelor of Fine Arts program in Art is offered to students with marked abilities who desire an intensive undergraduate concentration in visual arts, in preparation for either a career as a professional artist, for graduate study leading to the M.F.A., or both. Candidates accepted for the program will be expected to maintain a high standard of excellence, demonstrate significant artistic growth, and a 3.00 grade point average in all art courses.

Candidates seeking admission to the BFA program must submit an application to the chairperson who will then schedule a portfolio presentation and personal interview for the candidate with a commit
tee consisting of three departmental faculty members. Each student’s portfolio will be reviewed annually by departmental faculty, which will make a recommendation concerning the student’s status in the BFA program. If probation is recommended, students may apply for readmission at the completion of a full semester. Readmission will be contingent upon faculty evaluation.

Required 132 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing)

II. The Following Curriculum:

All BFA degree majors in Art have minimum requirement of 15 credits in History of Arts courses and 74 credits in Art Practice (studio) courses. Distribution of those credits is as follows:

Core Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Art 108</td>
<td>Hand &amp; Power Tool Safety</td>
<td>(1)</td>
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<tr>
<td>Art 122, 124</td>
<td>Two-dimensional Design and Three-dimensional Design</td>
<td>(6)</td>
<td></td>
</tr>
<tr>
<td>Art 130, 230</td>
<td>Drawing I, II</td>
<td>(6)</td>
<td></td>
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<tr>
<td>Art 210</td>
<td>History of Art I</td>
<td>(3)</td>
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<tr>
<td>Art 211</td>
<td>History of Art II</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 231</td>
<td>Figure Drawing I</td>
<td>(3)</td>
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and 18 credits from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Description</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Art 200, 201</td>
<td>Sculpture I, II</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 204, 205</td>
<td>Jewelry II, III</td>
<td>(3)</td>
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<tr>
<td>Art 220, 221</td>
<td>Painting I, II</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 232</td>
<td>Figure Drawing II</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 240</td>
<td>Printmaking I: Intaglio</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 241</td>
<td>Printmaking I: Relief and Serigraphy</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 242</td>
<td>Printmaking I: Lithography</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 245</td>
<td>Black and White Photography I</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Art 246</td>
<td>Black and White Photography II</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Art 259</td>
<td>Ceramics I</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 253</td>
<td>Ceramics II: Throwing</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 269</td>
<td>Slide Photography</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 261</td>
<td>Color Printing</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 270</td>
<td>Digital Media I</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 274</td>
<td>Calligraphy</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 276</td>
<td>Surface Design On Fabric</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 277</td>
<td>Fibers I</td>
<td>(3)</td>
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</table>

Before advancement to upper-division status, all B.F.A. candidates must participa
te in review and evaluation by the departmental faculty.

Major Area Courses:

At least 24 credits must be completed (including 200-level courses) in one of the following media areas:

- Ceramics
- Drawing
- Photography
- Printmaking
- Metalworking: Jewelry and Small Sculpture
- Sculpture

Upper-level students are required to complete a MINIMUM of 38 credits in courses selected from the following list:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Description</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Art 302, 303</td>
<td>Sculpture III, IV</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 304, 305</td>
<td>Jewelry &amp; Small Sculpture I, II, III, IV</td>
<td>(3, 3, 3, 3)</td>
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<tr>
<td>Art 306, 307</td>
<td>Advanced Ceramics</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 311</td>
<td>Time Based Media</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 322, 323</td>
<td>Painting III, IV</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Art 332, 333</td>
<td>Figure Drawing III, IV</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 340</td>
<td>Printmaking II: Lithography</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 341</td>
<td>Printmaking II: Color Lithography</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Art 342, 343</td>
<td>Printmaking II: III, Intaglio</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 344, 345</td>
<td>Printmaking II: III, Serigraphy</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 351</td>
<td>Ceramics II: Sculpture</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 353</td>
<td>Ceramics III: Throwing</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 355</td>
<td>Clay &amp; Glazes</td>
<td>(3)</td>
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<tr>
<td>Art 357</td>
<td>Raku</td>
<td>(3)</td>
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<tr>
<td>Art 361</td>
<td>Concepts in Visual Arts Education</td>
<td>(2)</td>
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<tr>
<td>Art 365, 366</td>
<td>Photography Studio I, II</td>
<td>(3, 3)</td>
<td></td>
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<tr>
<td>Art 370</td>
<td>Applied Visual Strategies</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 371, 372, 373</td>
<td>Fibers II, III, IV</td>
<td>(3, 3, 3)</td>
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<tr>
<td>Art 375</td>
<td>Brush Lettering &amp; Sign Painting</td>
<td>(3)</td>
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<tr>
<td>Art 379</td>
<td>Color Theory</td>
<td>(3)</td>
<td></td>
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<tr>
<td>Art 391a, 391b</td>
<td>Special Topics</td>
<td>(1-4)</td>
<td></td>
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<tr>
<td>Art 410</td>
<td>History of Art: Selected Topics</td>
<td>(1-4)</td>
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<tr>
<td>Art 411</td>
<td>History of Art: Study of Eastern Art from Prehistoric Periods to the Present</td>
<td>(3)</td>
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<tr>
<td>Art 412</td>
<td>History of Art: — 20th Century</td>
<td>(3)</td>
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<tr>
<td>Art 414</td>
<td>History of Art: Contemporary</td>
<td>(3)</td>
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<tr>
<td>Art 415</td>
<td>History of Art: Museum Internship</td>
<td>(1-3)</td>
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<tr>
<td>Art 416</td>
<td>History of Art: Renaissance, Baroque, Rococo</td>
<td>(3)</td>
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<tr>
<td>Art 419</td>
<td>History of Art: 19th Century Art and Architecture</td>
<td>(3)</td>
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<tr>
<td>Art 420</td>
<td>History of Art: Greek and Roman Art and Architecture</td>
<td>(3)</td>
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<tr>
<td>Art 421</td>
<td>History of Art: Computer Applications in the History of Art</td>
<td>(1)</td>
<td></td>
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<tr>
<td>Art 422</td>
<td>History of Art: Computer Internship</td>
<td>(1-3)</td>
<td></td>
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<tr>
<td>Art 490</td>
<td>Special Projects/Independent Research</td>
<td>(1-12)</td>
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</table>

(variable credit dependent upon scope of project)
All B.F.A. candidates are required to be represented in the BFA Group Exhibition with the approval of their faculty advisor.

TEACHER LICENSURE:

Students who wish to become secondary art teachers must fulfill all the requirements for the B.F.A. with Major in Visual Arts program as well as the Department of Teaching and Learning requirements in the Teaching and Learning section. Teachers completing this program are eligible for a K-12 license in visual arts in North Dakota. This must include T&L 400, Methods and materials in secondary Art Education. Admission to the Teacher Education program is normally sought while enrolled in T&L 325 (see College of Education and Human Development listing).

B.A. WITH MAJOR IN VISUAL ARTS

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which much be from a 4-year institution) including:

1. General Education Requirements (see University GER listing).
2. The Following Curriculum of 48 major credits.

All BA degree majors in Visual Arts have a minimum requirement of 9 credits in History of Visual Arts courses and 39 credits in Visual Arts Practicum (studio) courses. Distribution of those credits is as follows:

Core Requirements:

Art 108. Hand & Power Tool Safety. ..............................................(1)
Art 130, 230. Drawing I, II .......................................................(6)
Art 122, 124. Two-dimensional Design and Three-dimensional Design .......................................................(6)
Art 210. History of Art I ..........................................................(3)
Art 211. History of Art II ..........................................................(3)

Plus at least 9 credits in the following:

Art 200, 201. Sculpture I, II .........................................................(3, 3)
Art 204, 205. Jewelry I, II ..........................................................(3, 3)
Art 220, 221. Painting I, II .........................................................(3, 3)
Art 231, 232. Figure Drawing I, II ..............................................(3, 3)
Art 240. Printmaking I Intaglio ...................................................(3)
Art 241. Printmaking I Relief and Serigraphy .........................(3)
Art 242. Printmaking I Lithography ...........................................(3)
Art 245. Black and White Photography ....................................(3)
Art 246. Black and White Photography II ................................(3)
Art 250. Ceramics I .................................................................(3)
Art 253. Ceramics II: Throwing .................................................(3)
Art 260. Slide Photography ........................................................(3)
Art 261. Color Printing .............................................................(3)
Art 270. Digital Media I ............................................................(3)
Art 274. Calligraphy .................................................................(3)
Art 276. Surface Design on Fabric ...........................................(3)
Art 277. Fibers I ......................................................................(3)

Upper-level students are required to complete a MINIMUM of 20 credits in courses selected from the following list:

Art 302, 305. Sculpture III, IV ...................................................(3, 3)
Art 311. Time Based Media .......................................................(3)
Art 322, 323. Painting III, IV .....................................................(3, 3)
Art 332, 333. Figure Drawing III, IV .........................................(3, 3)
Art 340. Printmaking II Lithography ...........................................(3)
Art 341. Printmaking III: Color Lithography ...............................(3)
Art 342, 343. Printmaking III: Intaglio .......................................(3)
Art 344, 345. Printmaking II, III: Serigraphy ..............................(3, 3)
Art 357. Ceramics II: Sculpture ................................................(3)
Art 355. Clay & Glazes ............................................................(3)
Art 357. Raku .........................................................................(3)
Art 361. Concepts in Visual Arts Education ............................(2)
Art 365, 366. Photography Studio I, II ......................................(3, 3)
Art 370. Applied Visual Strategies ..........................................(3)
Art 375. Brush Lettering & Sign Painting ...............................(3)
Art 379. Color Theory ..............................................................(3)
Art 391a, 391b. Special Topics ...................................................(4-4)
Art 410. History of Art: Selected Topics ....................................(1-4)
Art 411. History of Art: Study of Eastern Art from Proto-literature Period to the Present ..........................(3)

Art 412. History of Art — 20th Century ........................................(3)
Art 414. History of Art: Contemporary ........................................(3)
Art 415. History of Art: Museum Internship ................................(1-3)
Art 416. History of Art: Renaissance, Baroque, Rococo .............(3)
Art 419. History of Art: 19th Century Art and Architecture ........(3)
Art 420. History of Art: Greek and Roman Art and Architecture (3)
Art 421. History of Art: Computer Applications in the History of Art ..................................................(1-12)

MINOR IN VISUAL ARTS (Studio)

Required 22 credits including:

Art 110. Introduction to the Visual Arts .......................................(3)
Art 130, 230. Drawing I, II .....................................................(6)
Art 122, 124. Two Dimensional Design and Three Dimensional Design ..................................................(6)

7 credits from the following: Art History, Ceramics, Drawing, Fibers, Jewelry, Painting, Printmaking, Sculpture, Photography

MINOR IN ART HISTORY

Required 24 credits including:

6 credits of History of Art Survey:
Art 210. History of Art I: Study of Western Art from Paleolithic to Renaissance ..................................................(3)
Art 211. History of Art II: Study of Art from the Renaissance to the Present ..................................................(3)

12 credits from any 400 level History of Art Course .................(12)

6 credits from the following studio courses:
Art 100. Introduction to Sculpture .............................................(3)
Art 120. Introduction to Drawing and Color Materials .............(3)
Art 122, 124. Two Dimensional Design and Three Dimensional Design ..................................................(6)

College of Education and Human Development

MINOR IN VISUAL ARTS EDUCATION (Middle or Secondary)

See Minor in Visual Arts (Studio) above.

B.S.Ed DEGREE WITH A COMBINED MAJOR IN ELEMENTARY EDUCATION AND VISUAL ARTS

For curriculum outline see the Teaching and Learning listing.

Courses

100. Introduction to Sculpture. 3 credits. Introduction for non-majors to sculptural materials, process, and concepts. F,S

108. Hand & Power Tool Safety. 1 credit. Lectures and demonstrations of power machinery and hand tools with emphasis on safety in practical application. Skills acquired equip the student for advanced courses in all media areas. F,S

110. Introduction to the Visual Arts. 3 credits. Study and analysis of artistic methods and meaning in the visual arts. Films, original works, slides, discussions, demonstrations. Structure and meaning of visual art forms as revealed through the analysis of psychological, sociological and philosophical applications of art media. F,S

120. Introduction to Drawing and Color Materials. 3 credits. Introduction for non-majors to drawing and color media and techniques. Includes working from still-lifes, models, and landscapes. F,S

122. Two-Dimensional Design. 3 credits. Basic concepts of 2-dimensional design as they apply to the fine and applied arts are learned through projects with various media. Black and white and color. F,S

124. Three-Dimensional Design. 3 credits. Prerequisite: Art 122. Basic concepts of 3-dimensional design as they apply to the fine and applied arts are learned through projects with various media. F,S

151. Introduction to Ceramics. 3 credits. S/U grading. Introduction of non-majors to a variety of cultural backgrounds and techniques required to make hand-built ceramic forms. This is achieved through lectures, discussions, demonstrations and readings. F,S

206. Sculpture I. 3 credits. Introduction to philosophy, aesthetics, history and processes of sculpture. Demonstrations in the use of metals, stone, clay, plaster, wood, etc. F,S

201. Sculpture II. 3 credits. Prerequisite: Art 200. Continuation of Sculpture I. F,S
204. Jewelry I. 3 credits. A comprehensive laboratory understanding of nonferrous metals and their manipulation is presented, leading to a proficiency for the making of body adornments and simple fabricated objects. Includes designing, piercing, soldering, forming and casting. F,S

205. Jewelrymaking II. 3 credits. Prerequisite: Art 204. A continuation and expansion of basic skills and concepts developed in Jewelry Making I. F,S

210. History of Art II. 3 credits. Introductory survey of art history from Paleolithic to Renaissance. F

211. History of Art III. 3 credits. Introductory survey of art history from Renaissance to present. S

220. Painting I. 3 credits. Prerequisite: Art 230. Experimentation with oil painting and associated media with emphasis upon creative compositions, using models, still-life subjects and imaginative contemporary expressions. F,S

221. Painting II. 3 credits. Prerequisite: Art 220. Continuation of concepts and techniques developed in Painting I. F,S

230. Drawing II. 3 credits. Prerequisite: Art 130. Advanced study and application of different drawing media, methods, and techniques. A continuation of the skills and concepts developed in Drawing I. F,S

231. Figure Drawing I. 3 credits. Prerequisite: Art 230. Study and application of different drawing media, methods, and techniques. Descriptive and analytical drawings of the figure. Work is done in varied media, varied techniques and varied conceptual approaches to help students develop visual expressive skills. F,S

232. Figure Drawing II. 3 credits. Prerequisite: Art 231. Advanced study from application to different media, methods, and techniques. Continuation of problems introduced in Figure Drawing I. F,S

240. Printmaking I: Intaglio. 3 credits. Survey of intaglio processes, including etching, engraving, aquatint, etc. on zinc and plastic. F,S

241. Printmaking I: Relief and Serigraphy. 3 credits. Survey of relief and serigraphic print processes. S

242. Printmaking I: Lithography. 3 credits. Survey of lithography processes, including drawing and washes. F,S

245. Black and White Photography I. 3 credits. Introduction to black and white photography in a visual arts environment. Emphasis is placed on developing an understanding of fine art photography through the practice of visualization and print making. Coursework includes an introduction to basic black and white film and paper processing. F

250. Advanced black and white photography I. 3 credits. Application of black and white photography in a visual arts environment. Emphasis will be placed on composition, lighting and subject content as it supports fine art photography. Course content includes lessons in historical processes. S

256. Ceramics I. 3 credits. Introduction to ceramics techniques. A beginning course for majors. Proficiency in the basic hand forming processes and glazing techniques and an understanding of the clay and firing processes are achieved through lectures, discussions, demonstrations, and readings. F,S

253. Ceramics II: Throwing. 3 credits. Prerequisite: Art 151 or 250 or permission of instructor. Throwing is the process by which a form is made by working with the hands and on the potter’s wheel. During the first semester emphasis is placed on centering the clay on the wheel and mastering the basic bowl and bottle forms. F,S

260. Color Photography. 3 credits. A beginning non-darkroom oriented class in color photography emphasizing the aesthetic, design and compositional aspects of this artistic medium. SU grading only. F,S

261. Color Printing. 3 credits. Prerequisite: Art 260 or instructor approval. This beginning course in color printing is designed as a complementary follow up course to up course to Slideshow Photography I. Art 260. SU grading only. F,S

270. Digital Media I. 3 credits. An introduction to 2D computer-based imaging (image creation, enhancement, and manipulation) and concepts of visual communication. Students will acquire a basic level knowledge of vector-based and pixel-based software. Alternative presentation methods of digital images will be explored in the final projects. F,S

274. Calligraphy. 3 credits. Lettering styles in Gothic, Roman and Script, utilizing several media and techniques; studies of the importance of lettering in advertising and illustrations. F,S

276. Surface Design on Fabric. 3 credits. Prerequisite: Art 122. Exploration of technical and design possibilities of various surface embellishments on fabric (printed, dyed, embroidered). Demonstration/lecture/studio workshop. F,S

277. Fibers I. 3 credits. Samples and finished art projects of student’s design carried out exploring technical and design possibilities of various textile techniques. Demonstration/lecture/studio workshop. F,S

292. Sculpture I. 3 credits. Prerequisite: Art 201. Continuation involvement in advanced sculpture processes and emphasis on personal style development. F

304. Jewelry and Small Sculpture I. 3 credits. Prerequisite: Art 206 or consent of instructor. Specialized studies and projects involving body adornment to small sculptural objects with emphasis on design, concept and craftsmanship. F,S

305. Jewelry and Small Sculpture II. 3 credits. Prerequisite: Art 304 or consent of instructor. Continuation and expansion of Jewelry and Small Sculpture I. S

306. Printmaking I: III Sculpture III. 3 credits. Prerequisite: Art 305. Continuation of advanced jewelry and metalsmithing processes with emphasis placed on development of personal expression through the medium of metal. F

307. Jewelry and Small Sculpture IV. 3 credits. Prerequisite: Art 306. Continuation of Jewelry and Small Sculpture III. S

311. Time-based Media. 3 credits, repeatable to 6. Prerequisite: Art 270. The course engages the students to explore various methods of working with elements of time and motion. Students will explore extracting and redefining visual units of time through moving media ranging from video to animation, performance, and installation. F,S

322. Painting III. 3 credits. Prerequisite: Art 221. Further development of painting concepts, comprehension and search of various media and styles. The course stresses the focus of one’s attitude towards developing a more personal visual statement in areas of personal interest. F,S

323. Painting IV. 3 credits. Prerequisite: Art 322. Continuation of Painting III. F,S

332. Figure Drawing III. 3 credits. Prerequisite: Art 233 or consent of instructor. Using the human figure as a basis for searching out presentation of plastic form, design and content. Traditional and experimental searching in various media, styles, forms. F,S

333. Figure Drawing IV. 3 credits. Prerequisite: Art 332. Continuation of Figure Drawing III. F,S

340. Printmaking II: Lithography. 3 credits. Prerequisite: Art 240 or 241. Basic black and white lithographic processes. F,S

341. Printmaking III: Color Lithography. 3 credits. Prerequisite: Art 340. Advanced work in stone lithography to include color processes. Introduction to plate lithography and related photographic procedures. S

342. Printmaking II: Intaglio. 3 credits. Prerequisite: Art 240. Intaglio work to include metal and plastics plates. Elaboration on the use of techniques, including soft ground, sugar lift, and the double print process. Introduction to multiply color printing and experimental processes. A slide survey of contemporary printmakers. F,S

343. Printmaking III: Intaglio. 3 credits. Prerequisite: Art 342. Continuation of Printmaking II: Intaglio. F,S

344. Printmaking II: Serigraphy. 3 credits. Prerequisite: Art 241. Investigation of screen printing techniques with professional quality, non-toxic materials and a full range of screen systems including experimentation approaches. F,S

345. Printmaking III: Serigraphy. 3 credits. Prerequisite: Art 344. Continuation of Printmaking II: Serigraphy. F,S

351. Clay & Glazes. 3 credits. Prerequisite: Art 220. Introduction to ceramics techniques. A beginning course in ceramics techniques. A beginning course for majors. Proficiency in the basic hand forming processes and glazing techniques and an understanding of the clay and firing processes are achieved through lectures, discussions, demonstrations, and readings. F,S

353. Ceramics III: Throwing. 3 credits. Prerequisite: Art 253. Devoted to more complex problems such as throwing larger pieces, multiple-sectioned forms, sets of forms and molded pieces. F,S

355. Clay & Glazes. 3 credits. Prerequisite: Art 151. This is a technical approach to the raw materials used in ceramics. The various processes of calculating, mixing, evaluating, and refining both clay and glazes are explored. Through lectures, readings and laboratory test work, a basic understanding of clay and glazes is achieved. S

357. Raku. 3 credits. Prerequisites: Art 151 and 253. Raku is a rapid low fire process with traditional roots in China and Japan. The American application of that process has expanded both the technique and its aesthetic. The raku class explores both the cultural foundation and the American technique within the context of the creative process. F

358. Photography Studio I. 3 credits, repeatable to 6. Prerequisite: Art 260 or 245 or consent of instructor. Refinement of conceptual and formal qualities in silver or non-silver process photographic projects using color or black and white digital techniques. The scope of work and media will be determined by contractual arrangement between student and instructor. F,S,SS

366. Photography Studio II. 3 credits, repeatable to 6. Prerequisite: Art 240 or 245 or consent of instructor. Further development of conceptual and formal qualities in silver or non-silver process photographic projects using color or black and white digital techniques. The scope of work and media will be determined by contractual arrangement between student and instructor. F,S,SS

370. Applied Visual Strategies. 3 credits. Prerequisites: junior standing. A studio/seminar course that examines conceptual practices in contemporary visual art and the relationship of those practices to art, artists and viewers within the western culture. The emphasis of the course will be on the application of these ideas and strategies through artistic production. On Demand.

371. Fibers II. 3 credits. Coursework will consist of sample making and sustained projects woven on the loom. Techniques taught include yarn dying. F

372. Fibers III. 3 credits. Prerequisite: Art 371. A continuation of skills acquired in Fibers II. This course will deal with double-weave loom construction processes and other multiple layer possibilities. S

373. Fibers IV. 3 credits. Prerequisites: Art 372 or 373 or 374. This course will deal with structure and pattern in weaving. Work will consist of samples and finished visual statements. F,S On Demand.

375. Brush Lettering and Sign Painting. 3 credits. Prerequisite: Art 222. A continuation of Calligraphy; further practical knowledge of the applications of finehand brush lettering; layout techniques; materials involved. F,S

379. Color Theory. 3 credits. Prerequisite: Art 372. Advanced experimentation with color phenomena, light & pigment theory through historical, theoretical and practical approaches. S

385. Multimedia. 3 credits, repeatable to 6. Prerequisites: Art 270, 311. Exploration of non-linear digital presentation concepts and methods; use of computing graphics, video, text, and sound. An overview of multimedia in the fields of interactive graphics, on-screen visual communication, and web design.
391. Special Topics. 1-4 credits, repeatable to 8 between a & b. Prerequisite: upper division status. Experience in specialized techniques and processes as they apply to various media both new and traditional. Offered on request. May be conducted either on laboratory or tutorial basis as subject matter permits. Letter grade only. F.S
391h. Special Topics. 1-4 credits, repeatable to 8 between a & h. Prerequisite: upper division status. Experience in specialized techniques and processes as they apply to various media both new and traditional. Offered on request. May be conducted either on laboratory or tutorial basis as subject matter permits. S-U grade only. F.S
397. Cooperative Education. Part-time, fall and spring, 1-3 credits. Repeatable to 3 credits only. Fall-time, fall, spring, and summer, 8 credits, not repeatable or inter-changeable with part-time. Arranged by mutual agreement among student, Department and employer prior to enrollment. Special permission is required. Regular grading only. F.S.S
400. History of Art: Selected Topics. 1-4 credits. Study of varied topics in the history of art and architecture. May be repeated as title changes. F.S.S.S
410. History of Art: Study of Eastern Art from Proto-Bronze Periods to the Present. 3 credits. Prerequisites: Art 210 and 211. Study of the arts of Asia with emphasis on China, Japan, and Indian sub-continent in terms of the morphology and symbolism. S.U.
412. History of Art: The Emergence of Modern Art. 3 credits. Prerequisites: Art 210 and 211. Study of major artists and artistic movements from symbolism to surrealism within the theoretical and cultural contexts of the early 20th Century. F/S
414. History of Art: Modernism and Contemporary Art. 3 credits. Study of art since 1945 with a focus on contemporary artists and emerging artistic trends. Emphasis is placed on social, cultural and economic contexts that inform artistic practice, art criticism, and theory. S/U.
415. History of Art: Museum Internship. 1-3 credits. The Museum Intern will work with the history of art faculty to select an exhibition to research, to prepare written paper and to present publicly. F.S
416. History of Art: Renaissance, Baroque, Rococo. 3 credits. Prerequisites: Art 210 and 211. Study of the architecture, sculpture, and painting of the Renaissance through the late seventeenth and eighteenth century Baroque, and Rococo stylistic interpretations. S.U.
419. History of Art: 19th Century Art. 3 credits. Prerequisites: Art 210 and 211. Study of the major artists and artistic movements from the French Revolution to Impressionism. F/S.
420. History of Art: Greek and Roman Art and Architecture. 3 credits. Prerequisites: for majors — Art 210 and 211, for non-majors — no prerequisites. Study of ancient Greek work from Geometric to Hellenistic and Rome and its empire from Republic to later Hellenistic to Constantinian times. F/S.
421. History of Art: Computer Applications in the History of Art. 1 credit, repeatable to 4 credits. Prerequisites: Art 210 and 211. This course is intended as an introductory course on computer software applications in the history of art. Students are able to study visual concepts in any media to explore paint, programs, animation, image manipulation and enhancement, CAD, 2D/3D modeling in the computer studio. F.S.S.S
422. History of Art: Computer Internship. 1-3 credits. Prerequisites: Art 210, 211, and 421. The Computer Intern will work with the history of art faculty to work on a MacroMedia Director project, CAD project, or design project and prepare a written paper and CD-ROM disk for public presentation. F.S.S.S
460. Methods, Materials and Philosophy: Art in the Elementary Classroom. 3 credits. Prerequisites: Sophomore standing in T&T or Art. The study of art materials, methods, philosophy and projects applicable for special education, kindergarten through sixth grade students. Emphasis is on inter-curricular creativity using both 2-dimen-sional and 3-dimensional projects, featuring multi-cultural and disciplined-based edu-cation. F.S.
490. Special Projects/Independent Research. 1-6 credits, no more than 12 in each medium. Prerequisite: Permission of instructor or chairperson. Research and cre-a tive experiences within a specific area of interest in the Visual Arts with emphasis on refinement of artistic applications of techniques and medium. Sculpture, History of Visual Arts, Painting, Drawing, Printmaking, Ceramics, Visual Arts Education, Fibers, Mixed Media, Jewelry, Photography. F.S.S.S

Athletic Training
(See Family Medicine listing)
Facilities

The Department of Atmospheric Sciences has several unique research and teaching facilities. The Regional Weather Information Center supports operational weather analyses, forecasting, and broadcasting. This facility allows students to participate in operational forecasting. Several teaching laboratories for use in cloud physics, air chemistry, and radar meteorology are also available. Two primary research facilities, a 5-cm wavelength Doppler weather radar and an instrumented Cessna Citation II research jet aircraft, are deployed in national and international research programs. Students are provided opportunities to participate in this research at the undergraduate level. Current research areas include radar meteorology, surface transporta
tion meteorology, climate analysis, cloud physics, aviation meteorology and weather modification.

B.S. IN ATMOSPHERIC SCIENCES

Requires 125 credits (36 of which must be number 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. Center for Aerospace Sciences requirements, see Aerospace Sciences listing.

III. The Following Curriculum:

<table>
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<tr>
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<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>AtSc 110</td>
<td>Meteorology I</td>
<td>4</td>
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<tr>
<td>AtSc 210</td>
<td>Meteorology II</td>
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<td>AtSc 240</td>
<td>Meteorological Instrumentation</td>
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<td>AtSc 110, Math 146 or Math 165.</td>
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<td>AtSc 310</td>
<td>Introduction to Weather Forecasting</td>
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<td>AtSc 210 or AtSc 419.</td>
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<td>AtSc 350</td>
<td>Atmospheric Thermodynamics</td>
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<td>AtSc 110 and Math 150.</td>
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<td>AtSc 352</td>
<td>Physical Meteorology</td>
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<td>AtSc 360</td>
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<td>AtSc 419</td>
<td>Synoptic Meteorology</td>
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<td>AtSc 420</td>
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<tr>
<td>AtSc 497</td>
<td>Internship</td>
<td>1</td>
<td>AtSc 419.</td>
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</table>

All other Atmospheric Sciences courses will satisfy the minor excluding the following:

- AtSc 231. Advanced Weather Modification
- AtSc 331. Aviation Meteorology II
- AtSc 397. Cooperative Education
- AtSc 494. Special Studies
- AtSc 497. Internship

**Courses**

110. Meteorology I 4 credits. Elements of the atmosphere with emphasis on those processes that affect the global atmospheric circulation. Includes laboratory. F.S.

210. Meteorology II 4 credits. Prerequisites: AtSc 110, Math 146 or Math 165. The analysis and portrayal of synoptic weather information. Kinematic flow analyses of barotropic and baroclinic systems. Introduction to many of the processes produced by NWS. Includes laboratory. F.

231. Aviation Meteorology II 4 credits. Prerequisite: AtSc 110. A study of weather hazards, meteorological flight planning, aviation weather equipment and human factors in weather flying safety. F.S.

240. Meteorological Instrumentation 4 credits. Prerequisites: AtSc 110 and Math 103. A study of the theory, design, and accuracy of instrumentation for the measurement of temperature, pressure, humidity, wind, and radiation. In addition, topics such as radar, and the use of aircraft and balloons as instrument platforms are also discussed. Includes laboratory. S.

250. Introduction to Weather Modification 3 credits. Prerequisite: AtSc 110. Provides a comprehensive introduction to basic concepts of weather modification as currently undertaken and researched around the world. It includes application of fundamental meteorological processes to weather modification, a study of cloud physics and seeding theory, an introduction to the principles of weather radar, a review of past and current programs, and a discussion of related legal, social, economic and environmental issues. F.

251. Advanced Weather Modification 3 credits. Prerequisites: AtSc 250. Provides students exposure to the practical aspects of weather modification operations. Instruction is given in the following areas: program design and evaluation, care and use of seeding materials and equipment, identification of seeding opportunities, and airborne delivery of seeding materials. Emphasis is given to safety, both on the ground and in the air. Flight training in seeding techniques is provided to students with commercial, instrument and multi-engine pilot ratings. S.

270. Computer Concepts in Meteorology 3 credits. Prerequisite: An approved computer language course. Examines the need and use of computers in atmospheric science. Topics will include the application of various computer concepts, such as numerical solution of linear differential equations and numerical integration, and numerical modeling techniques. S.

310. Introduction to Weather Forecasting 5 credits. Prerequisite: AtSc 210 or AtSc 419. An operations approach to application of practical methodologies of weather analysis using computer textual and graphic analysis systems. Involves routine weather laboratory activities commonly found within the operational sector of meteorology. S.

331. Aviation Meteorology II 3 credits. Prerequisite: AtSc 231. A study of aviation weather topics related to flight in high performance and air transport category aircraft. Includes a treatment of high altitude weather features, airborne weather radar, interannual, regional, medium-decadal and other topics. On demand.

340. Introduction to Radar Meteorology 4 credits. Prerequisite: Phys 252. Introduction to principles and theory of microwave radar and its use as a meteorological observation or research tool. Includes laboratory. F.

353. Physical Meteorology 3 credits. Prerequisites: AtSc 110 and Phys 252. A study of atmospheric and physical processes and properties from a physical standpoint. Includes boundary layer and upper atmospheric processes, cloud microphysics and electrification, and atmospheric radiation. S.

355. Surface Transportation Weather I 3 credits. Pre- or corequisite: AtSc 310. An introduction to the concepts, practices and methodologies used in the surface transportation industry. Includes configuration, siting, and data management/quality control of environmental sensor stations, fundamentals of surface transportation weather forecasting, overview of winter road maintenance methods, and applications of geographical information systems technologies in a weather and road maintenance environment. F.

360. Dynamic Meteorology 4 credits. Prerequisites: AtSc 350 and Math 266. Corequisite: Math 266. Basic equations of motion, atmospheric thermodynamics, balanced motions, and atmospheric disturbances are examined on an introductory level. S.

397. Cooperative Education 1-8 credits. May be repeated to a total of 12 credits with a maximum of 4 credits toward major electives. Prerequisites: Overall GPA of at least 2.5, and approval of the Coordinator of Atmospheric Sciences cooperative education. The student will receive credit for on-the-job compensated work experience in various areas of meteorology available within the government, university or private sectors. S/U grading only. F.S.S.S.

405. Numerical Methods in Meteorology 3 credits. Prerequisites: AtSc 270 and Math 266. This course is designed to introduce students to numerical and computational techniques to solve mathematical problems that are difficult to solve analytically. The course is designed to focus on numerical problems encountered in the field of atmospheric science. F.
419. Synoptic Meteorology I. 4 credits. Prerequisite: AtSc 360. Atmospheric processes important to large-scale flow. Geostrophic and gradient flows, thermal wind, Hadley cells, jet streams, and the general circulation. Laboratory. F

420. Synoptic Meteorology II. 3 credits. Prerequisite: AtSc 419. Application of atmospheric science to the analysis and forecasting. Introduction to numerical weather prediction. S

441. Radar Meteorology. 4 credits. Prerequisite: AtSc 340. Advanced radar theory, including basic radar principles, digital processing of radar signals, Doppler radar principles, and characteristic returns. Includes laboratory. S/G

450. Introduction to Cloud Physics Meteorology. 4 credits. Prerequisite: AtSc 350 and 353. A study of the physics of clouds with emphasis on micro-physical processes involved in cloud formation, precipitation production, and dissipation. Includes Laboratory. F/G

455. Surface Transportation Weather I. 3 credits. Prerequisite: AtSc 355, AtSc 420 or consent of instructor. Co-requisite: AtSc 420. An in-depth exploration of surface transportation meteorology designed to prepare students for a career in operational surface transportation meteorology. Includes application of mesoscale weather prediction models to surface transportation environment, introduction to pavement condition modeling, forecast verification methods, and an introduction to methods of maintenance decision-making. S

462. Senior Project. 1 credit, must be repeated for a total of 2 credits. Senior status in meteorology, consent of advisor required. A capstone project demonstrating competency of undergraduate program at Oldendorf Hall, or original student investigation of field or laboratory problems, after conference with a supervising faculty member of the department. S/U grading only. F-S-S

493. Special Studies in Meteorology. 1–4 credits. Prerequisite: Upper Division status and consent of instructor. May be repeated with change of subject matter to a maximum of four credit hours. Designed for those students who wish to pursue advanced topics in meteorology on an individual basis. F-S/S

497. Internship. 1–4 credits. Prerequisites: Upper division status and consent of instructor. Field experiences in several areas of meteorology including weather modification, radar operations, and cloud physics will be offered as available. S/U grading only. F-S/S

499. Topics in Meteorology. 2–4 credits. Consent of instructor. Course will cover one or more topics in meteorology of special interest to upper division students. Course may be repeated up to a maximum of 6 credits. F-S/Aviation

(Av) Lovelace (Chair), Bjorke, Bridewell, Dunlop, Foltz, Graziano, Jensen, Kenville, Lindseth, Marshall, Robertson, Schumacher, Skramstad, Smith, Trapnell, Venuhuizen, Watson and Zeidlik

The Department of Aviation offers six different majors in two degree programs. The Bachelor of Business Administration degree may be earned in either Aviation Management or Airport Management, and is granted by the College of Business and Public Administration. The Bachelor of Science in Aeronautics may be earned in the UND Armory Building or the UND Aerospace Student Services Office located at Odegard Hall, Room 259.

Cooperative Education and Internship programs are offered by the Department of Aviation, which encourages students to obtain on-the-job experience while continuing their academic education. Opportunities for semester-long cooperative internships are available at major airports, general aviation manufacturers, airlines, and weather modification research operations. Students can apply for elective credits through the cooperative internship program toward their graduation requirements. At the same time, students can obtain valuable on-the-job experience to supplement their formal education.

Career services include the UND Career Planning and Placement Center, the John D. Odegard School of Aerospace Science’s Student Services Center, and an industry and alumni career database, which is maintained by JDMAS. In addition, representatives from the aviation industry, including many airlines, the Federal Aviation Administration, and Transport Canada come to UND for career fairs and interviewing sessions.

AVIATION DEPARTMENTAL POLICIES
Declaring a Major or Minor

All aviation students are encouraged to declare an aviation major or minor as soon as practicable. In order to declare an aviation major or minor, students must have completed 24 college credits and have earned minimum grade point averages (GPAs) cumulative and institutional, of 2.50 on a 4.00 scale. In order to take 300-level and above aviation courses, students must have declared an aviation major or minor, or have received special permission from the instructor of the course.

Minimum Grade Point Average (GPA)

Each non-transfer student enrolling in Aviation 101, Survey of Flight, or Aviation 102, Introduction to Aviation, must have a minimum ACT score of 22, a combined SAT score of 1,030, or must have completed 12 credits of university level coursework with a minimum GPA of 2.50. Each transfer student enrolling in Aviation 101, Survey of Flight, or Aviation 102, Introduction to Aviation, must have a minimum GPA of 2.50. All students must maintain minimum grade point averages (GPAs), cumulative and institutional, of 2.50 in order to enroll in 200-level and above aviation courses. All students, who have enrolled in aviation courses and who fall below the minimum required GPA, are subject to withdrawal from the courses by the Aviation department.

Attendance

Aviation students are required to regularly attend all academic aviation classes in accordance with the intent and spirit of the policy set forth by the University of North Dakota. Attendance is mandatory with respect to satisfying ground school requirements as established by 14 CFR Part 141, Appendix B - paragraph 3, Appendix D - paragraph 3, Appendix F - paragraph 3, and Appendix G - paragraph 3. Failure to meet these attendance requirements will disqualify a student for FAA pilot or flight instructor certification. The following courses are 14 CFR Part 141 approved: Avit 102, 221, 222, 323, 324, 325, 414, and 415.

Lesson Completion

Students enrolled in flight courses are required to complete individual course in order to complete the course. Failure to complete the flight lessons within an acceptable time frame, stated in an applicable course syllabus or Training Course Outline (TCO), will result in an unsatisfactory grade.

TRANSFER OF COLLEGE CREDIT/ CERTIFICATES AND/OR RATINGS

The University of North Dakota’s Department of Aviation bases its flight education philosophy on a four-year university degree. Consequently, students who have obtained flight certificates/ratings, with or without college credit, may not have satisfied the academic and flight requirements contained within the aviation major that they are pursuing at the University of North Dakota.

All aviation courses subject to being transferred to UND, flight
or non-flight, are reviewed by the Aviation Department for transferability. It is the responsibility of the student to initiate a review process of transfer courses. For questions about the transferability of courses, please contact the Aviation Department, Student Services, at 1-800-258-1525 or write to: Student Services, John D. Odegard School of Aerospace Sciences, P.O. Box 9007, Grand Forks, North Dakota 58202-9007. Students may e-mail UND Aerospace at: flyund@aero.und.nodak.edu. Please refer to http://www.aero.und.edu/student-services/992000flightcoursepolicy.php3 for more information on departmental and transfer policies.

UND FLIGHT TRAINING POLICY

Regardless of academic major, once a student has enrolled at UND, all subsequent flight training required as part of a student’s course of study, must be completed in residence at UND. Flight training completed away from UND, which is required under a specific curriculum, will not be granted credit for the corresponding UND course, and the student will be subject to dismissal from the program.

MEDICAL CERTIFICATES

A current medical certificate is required for all students prior to beginning flight training. The physical examination must be performed by an M.D. who is a designated FAA medical examiner.

There are three types of medical certificates—Class I, Class II, and Class III. Students are advised to get a Class II certificate if they are planning to pursue a career as a professional pilot. Any physical limitation which may alter career plans should become evident at that time. Students over the age of 35 should consider obtaining a Class I medical certificate.

Students are encouraged to make plans to obtain their medical certificates six months before they will begin flight training at UND. This will ensure that any problems can be addressed before the student enrolls in a flight training course.

ALCOHOL AND DRUG PROGRAM PARTICIPATION

The John D. Odegard School of Aerospace Sciences is committed to the highest aviation safety standards. In accordance with the School’s safety “culture,” a “no tolerance” policy regarding the use of drugs and alcohol has been implemented. As a result, all students taking part in flight training at UND will be required to participate in a random drug testing program. This program runs continuously throughout the year for all flight students. Please refer to http://www.aero.und.edu/student-services/medicalcertdrugpro.php3 for more information on medical certificates and the drug testing program.

AVIATION DEPARTMENT, PROGRAM, OR COURSE-SPECIFIC FEES

Flight costs are not included in university tuition or fees. They are determined on an hourly basis for aircraft and flight instruction, and are in addition to tuition, fees and any other incidental expenses which are normally charged during registration.

Students enrolling in flight courses are required to deposit money into their flight accounts on a regular basis to cover their flight costs. Deposits should be in at least $500 increments. Students will not be permitted to fly if their minimum balance drops below $200. It is the responsibility of each student to have a known source of income prior to enrolling in any flight training-related curriculum.

A Laptop Computer Fee of $450 per semester ($900 per academic year) will be charged to all aviation students.

An Altitude Chamber Fee of $130 will be charged to aviation students who use the altitude chamber as part of Aviation 309, Flight Physiology.

An Air Traffic Control program fee or course fee may be charged to aviation students who declare Air Traffic Control as their major or enroll in certain classes.

Students are cautioned to note that costs are subject to change, and that they should consult with their academic advisor, student services advisor, or the applicable program cost sheets for the latest information. Please refer to http://www.aero.und.edu/student-services/progprocost.php3 for more information on program fees.

FINANCIAL AID INFORMATION

Students are encouraged to explore all financial aid options as outlined in the General Information section of this catalog. In addition to these forms of aid, the Aviation department provides endowed and non-endowed scholarships for qualifying students each year. All aviation students, including freshmen and new transfer students, are eligible to apply. Forms are available at the beginning of each fall semester from the Aviation Department. Applications for scholarships are due early during the fall semester; therefore, students are encouraged to pick up their applications as soon as they arrive for fall classes.

Financial aid is available only for those flight courses required as part of a particular curriculum. Students are encouraged to obtain additional ratings, endorsements, or experience; however, they are individually responsible for the expenses incurred.

PROGRAM DESCRIPTIONS

The Aviation Management curriculum is offered to those students whose career objectives are aimed toward the management and operation of the flight-related activities of the aviation industry. Emphasis is placed on applying modern management practices to the airline, airport, and general aviation management professions. A Commercial Pilot Certificate, with instrument and multi-engine ratings, is required.

The Airport Management curriculum is offered to those students seeking administrative positions with companies specializing in or related to the ground activities of the aviation industry. Foundational aspects of the general aviation and air carrier segments, as well as the overall aviation industry will be studied in-depth. However, sufficient flexibility in courses will allow the student to concentrate in a particular area of the industry such as general aviation operations, airline management, airport administration, or corporate aviation management. Completion of either Aviation 101, Survey of Flight, or Aviation 102, Introduction to Aviation, is required.

The Commercial Aviation curriculum is designed for a variety of flight-related careers. Commercial Aviation combines a solid background in aviation with a Certified Flight Instructor Certificate, including appropriate ratings. This major provides a student with the educational foundation necessary for entry-level pilot positions within the aviation industry. A Commercial Pilot Certificate, with instrument and multi-engine ratings, plus a Certified Flight Instructor Certificate, with airplane and instrument ratings, are both required. In addition, Regional Jet (RJ) training or Advanced Transport Category aircraft training is required to graduate with this major.

The Flight Education curriculum is designed for students interested in aviation education as a profession. Flight Education combines a solid background in aviation and vocational education with a Certified Flight Instructor Certificate, including appropriate ratings. This major provides a student with the educational foundation necessary to teach aviation courses in a vocational setting or community college, or to pursue graduate study. Students interested in teaching at the college level should obtain a master’s degree and a terminal doctoral degree in aviation or other complementary discipline. A Commercial Pilot Certificate, with instrument and multi-engine rat-
ings, plus a Certified Flight Instructor Certificate, with airplane, instrument, and multi-engine ratings, are both required.

The Air Traffic Control curriculum is designed to place students directly into the exciting career field of Air Traffic Control. In addition to the primary curriculum, this program requires a second field of study. Completion of either Aviation 101, Survey of Flight, or Aviation 102, Introduction to Aviation, is required.

The Aviation Systems Management curriculum is designed to be the concluding half of a two-plus-two degree. The objective is to allow students with two-year degrees in aviation maintenance, avionics, electronics, dispatch or other aerospace support services to complete a bachelor’s degree with an emphasis in management. Completion of either Aviation 101, Survey of Flight, or Aviation 102, Introduction to Aviation, is required.

Note: The Aviation faculty members highly recommend that Aviation students use the elective credits to pursue a minor or a second major in another discipline.

College of Business and Public Administration

B.B.A. WITH A MAJOR IN AVIATION MANAGEMENT

Required: 125 credits (36 of which must be numbered 300 or above, and 60 of which must from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. College of Business and Public Administration Requirements (see College section).

III. The following curriculum:

PRE-BUSINESS CURRICULUM

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<td>Acct 200</td>
<td>Elements of Accounting I</td>
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<td>Acct 201</td>
<td>Elements of Accounting II</td>
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<td>Acct 110</td>
<td>Microeconomics</td>
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<td>Comm 110</td>
<td>Fundamentals of Public Speaking</td>
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<td>Econ 201</td>
<td>Principles of Microeconomics</td>
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<td>Econ 202</td>
<td>Principles of Macroeconomics</td>
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<td>Econ 210</td>
<td>Intro to Business and Economic Statistics</td>
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<td>OR</td>
<td>Engl 125 Technical and Business Writing</td>
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<td>OR</td>
<td>Soc 103 Intro to Environmental Issues</td>
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<td>ISys 217</td>
<td>Fundamentals of Management Information Systems</td>
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AVIATION COURSES

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<td>Avit 101</td>
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<td>Avit 102</td>
<td>Introduction to Aviation</td>
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<td>Avit 103</td>
<td>Introduction to Air Traffic Control</td>
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<td>Avit 250</td>
<td>Human Factors</td>
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<td>Avit 202</td>
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<td>Avit 308</td>
<td>Aviation Safety</td>
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<td>Avit 405</td>
<td>Airliner Operations and Management</td>
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<td>Avit 407</td>
<td>General Aviation Operations and Management</td>
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<td>Fin 310</td>
<td>Principles of Finance</td>
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<tr>
<td>Isys 305</td>
<td>End-user Applications</td>
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<tr>
<td>Mgmt 300</td>
<td>Principles of Management</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt 301</td>
<td>Production Management</td>
<td>3</td>
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<tr>
<td>Mgmt 302</td>
<td>Human Resource Management</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt 310</td>
<td>Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt 475</td>
<td>Strategic Management</td>
<td>3</td>
</tr>
<tr>
<td>MKrt 305</td>
<td>Marketing Foundations</td>
<td>3</td>
</tr>
<tr>
<td>Poli 404</td>
<td>Urban Politics and Administration</td>
<td>3</td>
</tr>
<tr>
<td>Plus electives to total 125 credits</td>
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</table>

B.B.A. WITH A MAJOR IN AVIATION MANAGEMENT

Required: 125 credits (36 of which must be numbered 300 or above, and 60 of which must from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. College of Business and Public Administration Requirements (see College section).

III. The following curriculum:

PRE-BUSINESS CURRICULUM

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>Acct 200</td>
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<tr>
<td>Acct 201</td>
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<td>AtSc 110</td>
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<td>Comm 110</td>
<td>Fundamentals of Public Speaking</td>
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<td>Econ 201</td>
<td>Principles of Microeconomics</td>
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<tr>
<td>Econ 202</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
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<td>Econ 210</td>
<td>Intro to Business and Economic Statistics</td>
<td>3</td>
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<tr>
<td>Engl 110</td>
<td>College Composition I</td>
<td>3</td>
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<td>Engl 120</td>
<td>College Composition II</td>
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<td>OR</td>
<td>Engl 125 Technical and Business Writing</td>
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<tr>
<td>OR</td>
<td>Econ 210 Intro to Environmental Issues</td>
<td>3</td>
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<tr>
<td>ISys 217</td>
<td>Fundamentals of Management Information Systems</td>
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<td>Lang 101</td>
<td>Foreign Language</td>
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<td>Lang 102</td>
<td>Foreign Language</td>
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<td>Math 104</td>
<td>Finite Mathematics</td>
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<td>Math 146</td>
<td>Applied Calculus I</td>
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<td>Poli 115</td>
<td>American Government I</td>
<td>3</td>
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<td>Arts and Humanities Other than Language Electives</td>
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<td>One of the following:</td>
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<td>AtSc 171</td>
<td>Cultural Anthropology</td>
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<tr>
<td>Psy 111</td>
<td>Introduction to Psychology</td>
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</tr>
<tr>
<td>Soc 110</td>
<td>Introduction to Sociology</td>
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AVIATION COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>Avit 100</td>
<td>Aviation Orientation</td>
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<tr>
<td>Avit 101</td>
<td>Survey of Flight</td>
<td>5</td>
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<tr>
<td>Avit 102</td>
<td>Introduction to Aviation</td>
<td>5</td>
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<tr>
<td>Avit 103</td>
<td>Introduction to Air Traffic Control</td>
<td>2</td>
</tr>
<tr>
<td>Avit 250</td>
<td>Human Factors</td>
<td>2</td>
</tr>
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<td>Avit 202</td>
<td>Air Transportation</td>
<td>3</td>
</tr>
<tr>
<td>Avit 308</td>
<td>Aviation Safety</td>
<td>3</td>
</tr>
<tr>
<td>Avit 402</td>
<td>Airport Planning and Administration</td>
<td>3</td>
</tr>
<tr>
<td>Avit 403</td>
<td>Aerospace Law</td>
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<tr>
<td>Avit 442</td>
<td>Airport Operations and Administration</td>
<td>3</td>
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<tr>
<td>One of the following:</td>
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<tr>
<td>Avit 405</td>
<td>Airliner Operations and Management</td>
<td>3</td>
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<tr>
<td>Avit 407</td>
<td>General Aviation Operations and Management</td>
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</table>

ADVANCED BUSINESS COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
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<td>Business in the Legal Environment</td>
<td>3</td>
</tr>
<tr>
<td>Econ 303</td>
<td>Money and Banking</td>
<td>3</td>
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<tr>
<td>Fin 310</td>
<td>Principles of Finance</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt 300</td>
<td>Principles of Management</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt 301</td>
<td>Production Management</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt 302</td>
<td>Human Resource Management</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt 475</td>
<td>Strategic Management</td>
<td>3</td>
</tr>
<tr>
<td>MKrt 305</td>
<td>Marketing Foundations</td>
<td>3</td>
</tr>
<tr>
<td>Plus electives to total 125 credits</td>
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</tbody>
</table>

B.S. IN AERONAUTICS WITH A MAJOR IN AIR TRAFFIC CONTROL

NOTE: This program has a selective admission process. See your adviser for information.

Required: 125 credits (36 of which must be numbered 300 or above, and 60 of which must from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. College of Business and Public Administration Requirements (see College section).

III. The following curriculum:

ADVANCED BUSINESS COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct 315</td>
<td>Business in the Legal Environment</td>
<td>3</td>
</tr>
<tr>
<td>Econ 303</td>
<td>Money and Banking</td>
<td>3</td>
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<tr>
<td>Fin 310</td>
<td>Principles of Finance</td>
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<tr>
<td>Mgmt 300</td>
<td>Principles of Management</td>
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</tr>
<tr>
<td>Mgmt 301</td>
<td>Production Management</td>
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</tr>
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<td>Mgmt 302</td>
<td>Human Resource Management</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt 475</td>
<td>Strategic Management</td>
<td>3</td>
</tr>
<tr>
<td>MKrt 305</td>
<td>Marketing Foundations</td>
<td>3</td>
</tr>
<tr>
<td>Plus electives to total 125 credits</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

John D. Odgaard School of Aerospace Sciences
The following curriculum:

**GENERAL EDUCATION COURSES**

Arfc 110.............Meteorology I......................................................... (4)
Comm 110.............Fundamentals of Public Speaking.................................(3)
Econ 201.............Principles of Microeconomics.....................................(3)
Engl 110.............College Composition I................................................(3)
Engl 120.............College Composition II............................................... (3)
OR
Engl 125.............Technical and Business Writing....................................(3)

Lang 101.............Foreign Language.......................................................(4)
Lang 102.............Foreign Language.......................................................(4)
Math 146.............Applied Calculus I....................................................(3)

**AVIATION COURSES**

Avit 100.............Aviation Orientation....................................................(1)
Avit 101.............Survey of Flight..........................................................(5)
Avit 102.............Introduction to Aviation...............................................(5)
Avit 103.............Introduction to Air Traffic Control................................(2)
Avit 200.............Human Factors............................................................(2)
Avit 206.............ATC Tower Operations I.............................................(4)
Avit 241.............ATC Radar Operations I..............................................(4)
Avit 302.............Air Transportation.......................................................(3)
Avit 308.............Aviation Safety.............................................................(3)
Avit 362.............ATC Tower Operations II..............................................(4)
Avit 563.............ATC Radar Operations II.............................................(4)
Avit 402.............Airport Planning and Administration............................(3)
Avit 403.............Aviation Law.................................................................(3)
Avit 404.............ATC Tower Operations III...........................................(3)
Avit 465.............ATC Radar and Tower Operations IV.............................(4)

**OTHER REQUIREMENTS**

ISBE 320.............Business Communication............................................(3)
Comm 212.............Interpersonal Communication.....................................(3)
Mgmt 305.............Management Concepts...............................................(3)
Approved Computer Elective.........................................................(1-4)

**GENERAL EDUCATION COURSES**

Arfc 110.............Meteorology I......................................................... (4)
Comm 110.............Fundamentals of Public Speaking.................................(3)
Econ 201.............Principles of Microeconomics.....................................(3)
Engl 110.............College Composition I................................................(3)
Engl 120.............College Composition II............................................... (3)
OR
Engl 125.............Technical and Business Writing....................................(3)

Lang 101.............Foreign Language.......................................................(4)
Lang 102.............Foreign Language.......................................................(4)
Math 146.............Applied Calculus I....................................................(3)

**AVIATION COURSES**

Avit 100.............Aviation Orientation....................................................(1)
Avit 102.............Introduction to Aviation...............................................(5)
Avit 103.............Introduction to Air Traffic Control................................(2)
Avit 200.............Human Factors............................................................(2)
Avit 206.............ATC Tower Operations I.............................................(4)
Avit 241.............ATC Radar Operations I..............................................(4)
Avit 302.............Air Transportation.......................................................(3)
Avit 308.............Aviation Safety.............................................................(3)
Avit 362.............ATC Tower Operations II..............................................(4)
Avit 563.............ATC Radar Operations II.............................................(4)
Avit 402.............Airport Planning and Administration............................(3)
Avit 403.............Aviation Law.................................................................(3)
Avit 404.............ATC Tower Operations III...........................................(3)
Avit 465.............ATC Radar and Tower Operations IV.............................(4)

**B.S. IN AERONAUTICS WITH A MAJOR IN COMMERCIAL AVIATION**

Required: 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).
II. School of Aerospace Sciences Requirements (see College section).
III. The following curriculum:

**GENERAL EDUCATION COURSES**

Arfc 110.............Meteorology I......................................................... (4)
Comm 110.............Fundamentals of Public Speaking.................................(3)
Econ 201.............Principles of Microeconomics.....................................(3)
Engl 120.............College Composition II............................................... (3)
Engl 125.............Technical and Business Writing....................................(3)
Engl 217.............Applied Calculus I....................................................(3)
Engl 308.............Aviation Safety.............................................................(3)
Engl 309.............Flight Physiology........................................................(3)
Avit 323.............Aerodynamics—Airplanes............................................(3)
Avit 324.............Aircraft Systems........................................................(3)
Avit 325.............Multi-Engine Systems and Procedures..........................(2)
Avit 327.............Gas Turbine Engines..................................................(2)
Avit 403.............Aerospace Law............................................................(3)
Avit 411.............International and Long-Range Navigation.......................(3)
Avit 414.............Certified Flight Instructor..........................................(5)
Avit 415.............Instrument Flight Instructor........................................(4)
Avit 421.............Advanced Aerodynamics..............................................(3)
Avit 428.............Transport Category Aircraft Systems.............................(3)
Avit 430. Crew Resource Management .................................................. (3)  
Avit 480. Advanced Aircraft Operations .................................................. (3)  
Two of the following:  
Avit 402. Airport Planning and Administration ........................................ (3)  
Avit 405. Airl ine Operations and Management .......................................... (3)  
Avit 407. General Aviation Operations and Management ......................... (3)  

OTHER REQUIREMENTS  
AtSc 231. Aviation Meteorology I ......................................................... (4)  
ISBE 320. Business Communication ..................................................... (3)  
Approved Computer Elective ...................................................................... (1-4)  
Plus electives to total 125 credits.  

B.S. IN AERONAUTICS WITH A MAJOR IN FLIGHT EDUCATION  
Required: 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:  
I. General Education Requirements (see University GER listing)  
II. School of Aerospace Sciences Requirements (see College section)  
III. The following curriculum:  

GENERAL EDUCATION COURSES  
AtSc 110. Meteorology I ........................................................................ (4)  
Comm 110. Fundamentals of Public Speaking ........................................... (3)  
Econ 201. Principles of Microeconomics ................................................... (3)  
Engl 110. College Composition I ............................................................. (3)  
Engl 120. College Composition II ............................................................. (3)  
OR  
Engl 125. Technical and Business Writing ............................................... (3)  
Lang 101. Foreign Language ..................................................................... (4)  
Lang 102. Foreign Language ..................................................................... (4)  
Math 146. Applied Calculus I ................................................................. (3)  
Phys 130/150/L. Physics for Aerospace Sciences ....................................... (5)  
Arts and Humanities (other than Language) ............................................. (1)  
Social Science Elective ............................................................................. (3)  

AVIATION COURSES  
Avit 100. Aviation Orientation ................................................................. (1)  
Avit 102. Introduction to Aviation ............................................................. (5)  
Avit 103. Introduction to Air Traffic Control ............................................. (2)  
Avit 221. Basic Attitude Instrument Flying ................................................. (3)  
Avit 222. IFR Regulations and Procedures ............................................... (3)  
Avit 302. Air Transportation .................................................................... (3)  
Avit 308. Aviation Safety .......................................................................... (3)  
Avit 323. Aerodynamics—Airplanes ......................................................... (3)  
Avit 324. Aircraft Systems ....................................................................... (3)  
Avit 325. Multi-Engine Systems and Procedures ....................................... (2)  
Avit 403. Aerospace Law ......................................................................... (3)  
Avit 405. Airl ine Operations and Management ......................................... (3)  
Avit 407. General Aviation Operations and Management ....................... (3)  
Avit 414. Certified Flight Instructor .......................................................... (2)  
Avit 415. Instrument Flight Instructor ....................................................... (4)  
Avit 416. Multi-engine Flight Instructor .................................................... (2)  
Avit 490. Methods and Materials in Teaching Aviation ........................... (3)  

OTHER REQUIREMENTS  
AtSc 231. Aviation Meteorology ............................................................... (4)  
ISBE 303. Methods of Teaching Business Education ................................... (3)  
ISBE 320. Business Communication ..................................................... (3)  
ISBE 402. Curriculum Development in Voc Ed ........................................ (3)  
ISBE 403. Professional Training Techniques ......................................... (3)  
ISBE 444. Philosophy of Vocational Education ....................................... (3)  
Psyc 213. Educational Psychology ........................................................ (3)  
Approved Computer Elective ................................................................... (1-4)  
Plus electives to total 125 credits.  

MINORS IN AVIATION  
NOTE: Students who are majoring in an aviation field are not eligible to declare either of these minors.  

MINOR IN PROFESSIONAL FLIGHT  
Required: 30 credits including:  
AtSc 110. Meteorology I ................................................................. (4)  
Avit 231. Aviation Meteorology I ........................................................... (4)  
Avit 201. Introduction to Aviation .......................................................... (5)  
Avit 221. Basic Attitude Instrument Flying ................................................. (3)  
Avit 222. IFR Regulations and Procedures ............................................... (3)  
Avit 308. Aviation Safety ................................................................. (3)  
Avit 323. Aerodynamics—Airplanes ......................................................... (3)  
Avit 324. Aircraft Systems and Instruments .............................................. (3)  
Avit 325. Multi-Engine Systems and Procedures ....................................... (2)  

MINOR IN AVIATION MANAGEMENT  
Required: 24 credits including:  
AtSc 110. Meteorology I ................................................................. (4)  
Avit 101. Survey of Flight ................................................................. (5)  
Avit 102. Introduction to Aviation .......................................................... (5)  
Avit 202. Air Transportation ................................................................. (3)  
Avit 308. Aviation Safety ................................................................. (3)  
Avit 402. Airport Planning and Administration ....................................... (3)  
Avit 403. Aerospace Law ................................................................. (3)  
Avit 405. Airline Operations and Management ........................................ (3)  
Avit 407. General Aviation Operations and Management ....................... (3)  

COURSES  
All 300 and 400 level courses are restricted to Aviation majors, minors, or to students with instructor/departmental permission. All 400 level courses are restricted to junior status.  

100. Aviation Orientation, 1 credit.  This course is required for all aviation majors.  Its purpose is to prepare new students for their university and professional careers by discussing students’ responsibilities and options concerning the aviation industry. Aviation career options will be explored. Academic and airport requirements and procedures will be covered. F, S  
101. Survey of Flight, 5 credits. Corequisite: AtSc 110.  This course is designed for Airport Management, Air Traffic Control, or Aviation Systems Management majors, and Aviation Management minors, who do not intend to obtain a Private Pilot Certificate.  However, there is still a flight component to the course.  The flight lessons are designed to provide a broad array of flight experiences and practical knowledge concerning the nature of flight, the operation of airports, and the air traffic control system. Students will meet the aeronautical knowledge requirements of a Private Pilot.  Course content includes instruction in aerodynamics, aircraft systems, FAA regulations, U.S. airspace system design and function, weight and balance, aircraft performance, aviation weather, flight publication interpretation, radio navigation, cross-country planning and navigation, basic flight physiology, and flight safety.  Students must complete the appropriate flight lessons to satisfactorily complete the course.  Students who desire to obtain a Private Pilot Certificate after completing this course may do so by taking Aviation 102 and completing the associated flight lessons for that course. This course does not lead to a Private Pilot Certificate.  F, S, SS  
102. Introduction to Aviation, 5 credits.  Co-requisite: Avit 110.  The course will develop the student’s knowledge and skills that are needed to safely exercise the privileges and responsibilities of a Private Pilot.  Course content includes instruction in aerodynamics, aircraft systems, FAA regulations, U.S. airspace system, weight and balance, aircraft performance, aviation weather, flight publications, radio navigation, cross-country planning and navigation, basic flight physiology, and flight safety.  Students must complete the appropriate flight lessons to satisfactorily complete the course.  F, S, SS  
103. Introduction to Air Traffic Control, 2 credits.  This course allows all aviation majors the opportunity to simulate the role of an air traffic controller in a terminal radar approach control (TRACON) environment. Students will work in a north/south sectorization facility that has departures and arrivals landing at civilian controlled/uncontrolled airports and military airports.  This realistic look at air traffic control (ATC) will enhance any aviation enthusiast’s dream of working the radar scope.  F, S, SS  
104. Aviation History, 3 credits.  Topics covered include history from its very beginning through the space shuttle launches of today.  On Demand.  
142. Introduction to Aviation–Helicopter, 5 credits.  Co-requisite: AtSc 110.  The course will develop the student’s knowledge and skills that are needed to safely exercise the privileges and responsibilities of a Private Pilot.  Course content includes instruction in helicopter aerodynamics, helicopter systems, FAA regulations, U.S. airspace system, weight and balance, helicopter performance, aviation weather, flight publications, radio navigation, cross-country planning and navigation, basic flight physiology, and flight safety.  The student must complete the appropriate flight lessons to satisfactorily complete the course.  F, S, SS  
183. Glider Certification, 1 credit. Prerequisite: Avit 102.  SU grade only.  
221. Basic Attitude Instrument Flying, 3 credits.  Prerequisite: Avit 102.  This course will include an in-depth study of pilot/static and gyro instruments and basic attitude instrument flying.  In addition, the operation, interpretation and practical use of VOR, ADF, DME, GPS, RNAV, EMS, and Integrated Flight Control systems will be studied.  The student must complete the appropriate flight lessons to satisfactorily complete the course.  F, S, SS  
222. IFR Regulations and Procedures, 3 credits. Prerequisite: Avit 221.  This course will provide the student with a detailed study of the regulations, procedures, and publications necessary for operating IFR in the national airspace system.  Terminal and enroute procedures will be studied in detail.  The student must complete the appropriate flight lessons to satisfactorily complete the course.  F, S, SS  
243. Aircraft Systems-Helicopter, 3 credits. Prereq: or coreq: Avit 142.  Provides a study of turbine powered helicopters.  Theory and application of turbine engines.  Drive trains, fuel, oil, hydraulic, and electrical systems will be studied.  The
student must complete the appropriate flight lessons in the Commercial Helicopter Course to satisfactorily complete the course. On Demand.

244. Basic Attitude Instruments and Navigation-Helicopter. 3 credits. Pre- or co-requisite: Avit 243. This course will include an in-depth study of flight instruments for instrument flight in helicopters. In addition, the operation, interpretation and practical use of VOR,ADF,DME, RNAV, and RMI will be studied. The student must complete the appropriate flight lessons in the Instrument Helicopter course to satisfactorily complete the course. On Demand.

245. Instrument Flight Procedures-Helicopter. 3 credits. Pre- or co-requisite: Avit 244. This course will provide the student with an in-depth study of ATC procedures, ATC system charts, publication and rules of the IFR environment as they relate to helicopter operations. The student must complete the appropriate flight lessons in the Instrument Helicopter course to satisfactorily complete the course. On Demand.

250. Human Factors. 2 credits. This course introduces the student to issues influencing human performance in the complex operational aviation environments. Theory and practical applications of cognitive processing, decision-making, interpersonal communication and presentation will be covered. This course also provides an introduction to design elements intended to optimize man-machine interaction. F,S,SS.

260. ATC: Tower Operations I. 4 credits. Provides an orientation to basic fundamentals of ATC (CD) and ground control (CC) operations and procedures. Tower interaction with other ATC and non-ATC agencies is also part of this course. To complete this course, students must demonstrate their basic knowledge of the CD/CC function of control tower operations through written and performance examinations. An ATC lab is required. F, S, SS.

299. Topics in Aviation. (CNN) 1-3 credits. Selected topics in aviation which allow the student to study a specialized subject. Repeatable to a maximum of 6 credits. F, S.

301. Avionics for Aviators. 3 credits. Prerequisite: Avit 102. Theory of operation of various common types of avionics equipment. The course starts with a review of basic electronics, then applies this basic knowledge to human factors associated with avionics. Topics include basic radio wave propagation, antenna/theory, transmitter/receiver theory, and theory and limitations of the basic navigation and air traffic control systems. A term paper is required. Students are encouraged to learn Morse Code for extra credit. F/2.

302. Air Transportation. 3 credits. Provides a broad understanding of all aspects of air transportation industry. The course includes an overview of state and federal regulations and the basis for their establishment. Requirements of the past, present and future with respect to aircraft and engine design, airports and supporting facilities are reviewed and evaluated. Students are introduced to the practical economics of airline operations and maintenance and the factors which affect a profitable operation. F, S.

308. Aviation Safety. 3 credits. Prerequisite: Avit 102. Theory of operation of various common types of avionics equipment. The course starts with a review of basic electronics, then applies this basic knowledge to human factors associated with avionics. Topics include basic radio wave propagation, antenna/theory, transmitter/receiver theory, and theory and limitations of the basic navigation and air traffic control systems. A term paper is required. Students are encouraged to learn Morse Code for extra credit. F/2.

320. Aviation Safety. 3 credits. Prerequisite: Avit 102. This course is designed to introduce the student to the United States legal system and the responsibilities of the airport manager with a special emphasis on the Federal Air Regulations governing the operation and administration of commercial service airports within the United States. F, S, SS.

325. Multi-Engine Systems and Procedures. 2 credits. Prerequisite: Avit 322. This course covers the operations necessary to operate light twin-engine aircraft. Normal and abnormal procedures are included along with a discussion of the systems and avionics normally associated with multi-engine aircraft. Regulations for commercial pilot license and medical certificate are included. F, S, SS.

327. Gas Turbine Engines. 2 credits. Prerequisite: Avit 325. This course will provide an in-depth introduction to the turbine engine through the study of its development, manufacture, theory of operation and the function of its major components. F, S, SS.

346. Aerodynamics and Performance — Helicopter. 3 credits. Prerequisite: Avit 320. This course provides study of helicopter aerodynamics, performance, stability, control, weight and balance and special flight conditions. The student must complete the appropriate flight lessons in the Commercial Helicopter Course to satisfactorily complete the course.

348. Commercial Certification — Helicopter Additional Rating. 3 credits. Prerequisite: Commercial Pilot Certificate. This course provides the dual flight instruction and solo practice necessary to obtain a Commercial Pilot Certificate with a Rotorcraft Helicopter Rating. The course includes ground instruction in helicopter aerodynamics, flight attitudes, control systems, auto rotation, vertical flight, and off-airport operations. The student must complete the appropriate flight lessons to satisfactorily complete the course.

349. Instrument Certification — Helicopter Additional Rating. 1 credit. Prerequisite: Avit 142. At the completion of this course, helicopter students will have completed all FAA requirements for a Helicopter Instrument Rating. A minimum of a Private Pilot Certification with an Instrument Rating is required to enroll in this course. F, SS grading only. On Demand.

362. ATC: Advanced Tower Operations II. 4 credits. Prerequisite: Avit 260. Utilizing the USDA Aerospace 3-D tower simulation, students are taught, starting with the basic and continuing to the advanced, fundamental local control tower operations, structure, and procedures. Tower concepts and theories, positions, facility levels (5), standard terminology, and airspace orientation are included. Students learn about control tower positions, standard and enhanced equipment located in a tower, and basic separation requirements. To complete this course, students must successfully complete an advanced radar simulation through written and performance examinations. An ATC lab is required. F, S, SS.

385. Human Factors. 3 credits. Prerequisite: Avit 102. The student will be provided with an introduction and an in-depth study of human factors and issues associated with aviation. Emphasis is placed on how human factors impact aviation operations and performance.

386. Conventional Aircraft Operations. 1 credit. Prerequisite: Avit 102. Provides the necessary ground school and dual flight instruction for an endorsement for operation of tailwheel-type airplanes. Allows the student to acquire the knowledge and skills necessary for operation of the tailwheel aircraft on the ground and in flight. F, S-U grading only. F, S, SS.

398. Introduction to Aerobatic Flight. 1 credit. Prerequisite: Avit 102. Provides an introduction to aerobatics through the study of flight dynamics and the development of the basic elements of aerobatic flying. Students will be introduced to the principles of aerodynamics and their practical application in aerobatics.

400. Airworthiness Assurance. 3 credits. Prerequisite: Avit 250. In this course, human physiological responses to the stresses of flight environment will be examined in-depth. Topics include decompression, hypoxia, spatial disorientation, altered pressure environments, acceleration and fatigue. The student will experience altered pressure environments during laboratory flights in the UND Aerospace altitude chamber. F, S, SS.

402. Airport Planning and Administration. 3 credits. Prerequisite: Avit 302. This course provides an introduction to the complex elements of airport planning and its importance in achieving a successful airport operation. Course content includes a study of the duties and responsibilities of the airport manager with a special emphasis on the Federal Air Regulations governing the operation and administration of commercial service airports within the United States. F, S, SS.

403. Aerospace Law. 3 credits. Prerequisite: Avit 302 and junior standing. This course is designed to introduce the student to the United States legal system and the development of aviation law. The course will cover a broad range of topics including FAA enforcement actions, aircraft ownership issues, products liability law, criminal law, insurance law, airline law, and a discussion of legal issues facing airports. F, S, SS.

404. Airline Operations and Management. 3 credits. Prerequisite: Avit 302. This course examines the four major areas of air carrier operations, including ground, technical, flight and system operations, as well as airline economics, utilizing a management simulation tool. There is an intensive examination of regional, point-to-point and network carrier operations. Student management teams make weekly decisions in seven categories: Overall Strategy, Marketing, Operations Management, Human Resource Development, Finance, Asset Management, and Behavioral Elements. A portion of each class time is devoted to simulation activities, and the grading assignments focus on management decisions pertinent to the topic assigned, relying in part on current industry events, with an emphasis on ethical behavior. F, S, SS.

407. General Aviation Operations and Management. 3 credits. Prerequisite: Avit 302. This course considers the different types of aviation operations, including general aviation, corporate flight departments, fixed-base operations, air cargo operations, and fractional ownership programs.

411. International and Long Range Navigation. 3 credits. Prerequisite: Avit 325 and Math 146. This course provides an understanding of global charting systems, great circle routes and waypoint plotting. Preliminary navigation skills and modern systems of long range navigation are studied as well as methods and systems of computing, communicating and displaying navigation information. This course also gives the student a familiarization with the international airspace structure including Required Navigation Performance (RNP) standards, Minimum Navigation Perfor-
manance Specification (MNP) operations and Reduced Vertical Separation Standards (RVSS).

414. CFI Certification. 5 credits. Prerequisite: Avit 325. Provides the student with a detailed study of the responsibilities and teaching concerns of a flight instructor. The course is divided into two major sections: fundamentals of teaching and learning, including effective teaching methods, learning process, consideration of flight training syllabi, effective evaluations, and flight-instructor responsibilities; the second section is concerned with the analysis of the flight maneuvers involved with Private Pilot, Commercial Pilot and Flight Instructor Certificates. The course will also provide practical teaching experiences. The student must complete the associated flight lessons in the CFI Flight Course to satisfactorily complete the course. F, S, SS

415. Instrument Flight Instructor. 4 credits. Prerequisite: Avit 414. Provides the student with an in-depth study of the responsibilities and techniques to be used as an Instrument Flight Instructor. Additional study of instrument flight, ATC system, charts, publications and rules of the IFR environment as they pertain to teaching will be covered. The course will provide practical teaching experience. The student must complete the associated flight lessons in the Instrument Flight Instructor Course to satisfactorily complete the course. F, S, SS

416. Multi-engine Flight Instructor. 2 credits. Prerequisite: Avit 325 and 414. This course provides an understanding of the fundamentals of teaching in a multi-engine airplane. The course will include multi-engine aerodynamics and performance, analysis of multi-engine operations, single-engine operations and procedures, flight instructor responsibilities and safety concerns in multi-engine airplanes. The student must complete the associated flight lessons in the Multi-engine Flight Instructor Course to satisfactorily complete the course. F, S, SS

421. Advanced Aerodynamics. 3 credits. Prerequisite: Avit 325 or consent of the instructor. Beginning with a brief review of low speed aerodynamics, the course provides a study of the terminology and aerodynamics fundamentals associated with transonic and supersonic flight. F, S

428. Transport Category Aircraft Systems. 4 credits. Prerequisite: Avit 325 or consent of the instructor. This course will provide an in-depth study of the complex systems of today’s air transport jet aircraft with an emphasis on Regional Jet aircraft. It provides a review of all primary systems, to include both normal and abnormal operations. The course also provides the necessary background for Regional Jet simulator training to be presented in a later course. F, S, SS

429. Turboprop Operations. 4 credits. Prerequisite: Avit 325 or consent of the instructor. This course will provide an introduction to turboprop aircraft systems and procedures with emphasis on a specific model of regional aircraft. The aircraft model studied may vary from semester to semester. F, S

430. Crew Resource Management. 3 credits. Prerequisite: Avit 250 and 325. This course will provide an in-depth study of Crew Resource Management which involves having a thorough understanding of crew communications, teamwork, leadership, “followership”, decision-making, and situational awareness. In addition, the student will learn how to properly utilize all available resources in order to conduct a safe and efficient flight. This course will also examine the benefits of diversity, and the role diversity plays in the modern aerospace industry. F, S

442. Airport Operations and Administration. 3 credits. Prerequisite: Avit 402. This course is a second of a two course curriculum in airport administration. It is an advanced course emphasizing the further development of the skills and understanding of the operation and management of commercial service airports of all sizes. The content focuses upon the practical application of airport manager skills and includes educational tours of operating airports. The program stresses the airport manager’s role in relations with tenants, public officials, and patrons through the honing of individual writing and public speaking skills. S

464. ATC: Tower Operations III. 4 credits. Prerequisite: Avit 362. This course teaches advanced local control operations and procedures. Students will learn about and practice Land and Hold Short Operations (LAHSO), below Basic VFR minima operations, IFR operations, nighttime operations, non-radar departure procedures, in-flight and ground emergencies, and special operations (runway incursions, hot cargo, hijacking procedures). To complete this course, students must demonstrate their knowledge of the preceding tower courses, in addition to this course’s content. An ATC lab is required. F, S, SS

465. ATC: Radar and Tower Operations IV. 4 credits. Prerequisites: Avit 363 and 464. This course is a very advanced radar and tower procedures course and is a type of capstone course for all previous ATC courses. Comprehensive knowledge of all ATC procedures, equipment and regulatory separation standards is stressed with a focus on the terminal ATC environment. Students complete a series of increasingly difficult ATC simulation exercises. Advanced subject material includes: Tower control concepts, advanced terminal separation techniques and unusual situations. To complete this course, students must successfully perform an advanced radar/tower simulation exercise without assistance. An ATC lab is required. F, S, SS

480. Advanced Aircraft Operations. 3 credits. Prerequisites: Avit 421 and 428. The topics of study include high speed and high altitude aerodynamics, physiological aspects of high altitude, flight conditions associated with operations near high speed buffet boundaries, effects of turbulence on high speed aircraft, the effects of maneuvering load factors, FAR parts and takeoff and landing performance, along with the general study of applied systems management. The student must complete the associated flight lessons to satisfactorily complete the course. F, S, SS

481. Airline Transport Pilot Certification Lab. 2 credits. Prerequisites: Avit 308 and 325. Provides a comprehensive background of flight experience in two engine airplanes to meet the proficiency requirements of the FAA Airline Transport Pilot oral and flight examinations. Students enrolling in the course must hold a valid FAA Commercial Pilot Certificate with an airplane category and multi-engine class rating; in addition, they must hold a valid Instrument-Airplane Rating. Flight instruction in the course includes basic instrument flying, concentrated practice on instrument approach procedures, emergency procedures, and cross-country flying. S/U grading only. On Demand

490. Methods and Materials in Teaching Aviation. 3 credits. Prerequisite: Avit 414. This course will acquaint the student with resources and software used in classroom teaching specific to aviation. Topics covered include use of presentation software, writing a syllabus, composing lesson plans, delivering a lecture/presentation and writing tests. Discussion of teaching methods and critiques of peers will also be included. On Demand.

497. Aviation Internship. 1-4 credits. Prerequisites: will vary depending on the area of the internship. Aviation internship will provide a student with the actual, on-the-job exposure of a particular area of interest the student has within the aviation industry. Internships will be available in airport management, general aviation management, on both the manufacturer and fixed-base operator level and within the weather modification industry. The weather modification internship will be available only with the necessary federal funding or contractor support. A maximum of 4 credits will be allowed toward graduation. F, S, SS

499. Readings in Aviation. 1-3 credits. Prerequisite: senior standing. Repeatable to 8 credits. The course is designed for seminar and project assignments. Both the seminar and project assignments are to be concerned with in-depth studies of aviation related subjects including airport traffic counts, student flight activities, airport management problems, and statistical reports. F, S

Banking and Financial Economics
(See Economics listing)

Biochemistry and Molecular Biology
(BMB)

Hombardberg (Chair), Detke, Foster, Lambeth, Milavetz, Miyagi, Ray, Shabb, Singh, Sukalski, and Vaughan

Courses

301. Biochemistry Lecture. 3 credits. Three lectures per week. Prerequisite: Chemistry 240 or 341 or equivalent. Topics including enzymology; bioenergetics; metabolism and its regulation; nucleic acid metabolism, recombinant DNA technology; structure and function of macromolecules. S

303. Biochemistry Laboratory. 3 credits. Prerequisites: Chemistry 240 or 341 or equivalent, and CLS 336. The laboratory (associated with Biochemistry 301) consists primarily of chemical analysis of biological materials. Fundamental clinical laboratory procedures utilizing various techniques and instrumentation are carried out. S

454. Directed Studies. 1-4 credits. A course designed to provide individual students with the opportunity for creative, scholarly, and research activities in Biochemistry and Molecular Biology under the direction of a departmental faculty member. Open to all students, with consent of the instructor required. F, S, SS

Biology

(See Biology listing)

Austin, Carmichael, Crawford, Fivizzani, Goodwin, Kelsch (Chair), Kupchella, La Duke, Meberg, Newman, Potvin, Pyle, Rhen, Schlosser, Sheridan, Sweitzer, and Vaughan

The Department of Biology offers concentrated study in Biology (Biology or Pre-Health Sciences Emphasis) and Fisheries and Wildlife Biology. Our objective is to provide students with a broad

301. Biochemistry Lecture. 3 credits. Three lectures per week. Prerequisite: Chemistry 240 or 341 or equivalent. Topics including enzymology; bioenergetics; metabolism and its regulation; nucleic acid metabolism, recombinant DNA technology; structure and function of macromolecules. S

303. Biochemistry Laboratory. 3 credits. Prerequisites: Chemistry 240 or 341 or equivalent, and CLS 336. The laboratory (associated with Biochemistry 301) consists primarily of chemical analysis of biological materials. Fundamental clinical laboratory procedures utilizing various techniques and instrumentation are carried out. S

454. Directed Studies. 1-4 credits. A course designed to provide individual students with the opportunity for creative, scholarly, and research activities in Biochemistry and Molecular Biology under the direction of a departmental faculty member. Open to all students, with consent of the instructor required. F, S, SS

Biology

(See Biology listing)

Austin, Carmichael, Crawford, Fivizzani, Goodwin, Kelsch (Chair), Kupchella, La Duke, Meberg, Newman, Potvin, Pyle, Rhen, Schlosser, Sheridan, Sweitzer, and Vaughan

The Department of Biology offers concentrated study in Biology (Biology or Pre-Health Sciences Emphasis) and Fisheries and Wildlife Biology. Our objective is to provide students with a broad
knowledge of modern biology through training in each of the major areas of biological science: ecology, genetics, molecular biology, cell biology, morphology, and systematics. Specific department requirements for majors and minors are listed below.

**FACILITIES**

The Department of Biology is housed in Starcher Hall, completed in 1981. In addition to classrooms, two computer laboratories and other specialized teaching laboratories, the building houses a herbarium, three greenhouses, environmental chambers, animal rooms for terrestrial and aquatic organisms, observation rooms, vertebrate and invertebrate museums, a darkroom, and iso trope and tissue culture facilities. The Department also maintains two natural areas (virgin prairie and wooded stream valley) for teaching and research.

**INDEPENDENT STUDY**

Well qualified majors are urged to participate in independent studies, honors work, or undergraduate research. Normally studies of this nature are initiated by invitation from a faculty member. Students selected for these programs usually carry out their studies in the research laboratories of the individual professors. Research apprenticeships or assistantships financed by private foundation support or faculty research grants may be available for part-time employment. The department participates in the University Honors Program through certain interdisciplinary colloquia, by honors credit in advanced courses, and by independent studies and tutorials in advanced topics.

**College of Arts and Sciences**

**B.S. WITH MAJOR IN BIOLOGY**

This program is designed for students interested in a broad general background and students interested in a number of biological sub-disciplines, including: Ecology, Conservation Biology, Behavior, Evolution, Fisheries Biology, Wildlife Biology, Genetics, Morphology, Physiology, Systematics, Cell Biology, and Molecular Biology. Students must consult with their advisor to develop an appropriate course of study.

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. 40 major hours including:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 150L &amp; 151L</td>
<td>General Biology I &amp; II</td>
<td>(6)</td>
</tr>
<tr>
<td>Biol 152L &amp; 151L</td>
<td>General Biology Lab I &amp; II</td>
<td>(2)</td>
</tr>
<tr>
<td>Biol 312</td>
<td>Evolution</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 315</td>
<td>Genetics</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 352</td>
<td>Ecology</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 341</td>
<td>Cell Biology</td>
<td>(3)</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>(20)</td>
</tr>
</tbody>
</table>

III. Biology Electives: (20)

Students enrolling in other 300 or 400 level biology courses are expected to have mastered material from the courses listed in section II above; therefore, we strongly advise the prior completion of all courses from section II.

All other 300 or 400 level biology courses will count toward the 40 hour major. (See below for limitations on 494 -- Directed Studies, 492 -- Research, and 489 -- Senior Honors.)

No more than one biology course intended for non-majors (all UND 200 level biology courses) will count toward the 40 hour major.

Up to two life-sciences related courses from other departments at UND may be counted toward the 40 hr major as electives.

At least four upper-division biology courses with laboratories must be included in the 40 hour major (qualifying classes marked with asterisk*).

IV. Required in other Departments: (38 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys 211 &amp; 212</td>
<td>College Physics I &amp; II</td>
<td>(8)</td>
</tr>
</tbody>
</table>

Level II proficiency in a foreign language.................(8)

Chem 121/121L, General Chemistry I Lab....................(4)

Chem 122/122L, General Chemistry II Lab....................(4)

8-hour hours from:

Chem 010 & BMB 301 Survey of Organic Chemistry
and Biochemistry Lecture.................................(8)

OR

Chem 341 & 342 Organic Chemistry..............................(10)

3-4 hours of math from either Math 146 (Applied Calculus) or Math 166 (Calculus II). The prerequisites for each of these courses are the responsibility of the student.

**B.S. WITH MAJOR IN BIOLOGY** *(Pre-Health Sciences Emphasis)*

This program is designed for students interested in medicine or in allied medical fields such as dentistry, veterinary medicine, medical laboratory research, etc. Students must consult with their advisor to develop an appropriate course of study.

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

1. General Education Requirements (see University GER listing).

2. 40 major hours including:

   A. Basic requirements:......................................................(20)

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 150 &amp; 151L</td>
<td>General Biology I &amp; II</td>
<td>(6)</td>
</tr>
<tr>
<td>Biol 156L &amp; 151L</td>
<td>General Biology I &amp; II Laboratory.....................(2)</td>
<td></td>
</tr>
<tr>
<td>Biol 312</td>
<td>Evolution</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 315</td>
<td>Genetics</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 332</td>
<td>Ecology</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 341</td>
<td>Cell Biology</td>
<td>(3)</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>(20)</td>
</tr>
</tbody>
</table>

   B. Advanced requirements:...........................................(8)

   8-hour hours from:

   Biol 341L, Cell Biology Laboratory..........................(1)

   Chem 341, Genetics.............................................(3)

   Biol 369, Histology.............................................(3)

   Biol 369L, Histology Laboratory................................(3)

   Biol 370L, Vertebrate Zoology..................................(3)

   Biol 371, Anatomy and Adaptations Laboratory..............(2)

   Biol 442, Physiology of Organs and Systems................(3)

   Biol 442L, Physiology of Organs and Systems.................(1)

   III. Biology electives:.............................................(12)

   See your adviser for appropriate and up-to-date course recommendations.

   All other 300 or 400 level biology courses will count toward the 40 hour major.

   No more than one biology course intended for non-majors (all UND 200 level biology courses) will count toward the 40 hour major.

   At least four upper-division biology courses with laboratories must be included in the 40 hour major (qualifying classes marked with asterisk*).

   IV. Required in other Departments: (35-38 hours)

   8-hour hours from:

   Phys 211 & 212, College Physics I & II.......................(8)

   OR

   Phys 251 and 252, University Physics I & II.................(8)

   Level II proficiency in a foreign language...................(8)

   Chem 121/121L, General Chemistry I and Laboratory........(4)

   Chem 122/122L, General Chemistry II and Laboratory........(4)

   8-hour hours from:

   Chem 240 & BMB 301 Survey of Organic Chemistry and
   Biochemistry Lecture...........................................(8)

   OR

   Chem 341 & 342, Organic Chemistry.............................(10)

   3-4 hours of math from either Math 146 (Applied Calculus) or Math 166 (Calculus II). The prerequisites for each of these courses are the responsibility of the student.

**Teacher Certification**

Students seeking secondary teacher certification in Biology must complete the Department of Teaching and Learning requirements in Secondary Education (see Secondary Education listing).
These students must complete the General Emphasis Option for the B.S. in Biology and include the following three courses as biology electives:

- Biol 312: Evolution (3)
- Biol 336: Systematic Botany (4)
- MBio 302: General Microbiology (4)

Other choices of courses in Biology should be made with the aid of a Biology adviser.

Among the other requirements for the major, students seeking teacher certification must complete the Chem 240 Organic Chemistry (5) and BMB Biochemistry Lecture (3) option. Level II language proficiency is not required of students who complete the Teaching and Learning program in Secondary Education. These students must however, complete at least four hours of Earth Science (Geol 101 and 101L, Physical Geology, Geog 121 and 121L, Physical Geography, or Geog 134 and 134L, Introduction to Global Climate).

Formal admission to Teacher Education is required and is normally sought while enrolled in T&L 325 (see Department of Teaching and Learning listing).

Biology majors seeking secondary certification must have an adviser both in the Biology Department and in the Department of Teaching and Learning.

**B.S. IN FISHERIES AND WILDLIFE BIOLOGY**

The department offers a four-year program leading to the degree of Bachelor of Science in Fisheries and Wildlife Biology. Students completing this program are qualified to obtain positions with state, federal and private fisheries and wildlife organizations.

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution including:

I. General Education Requirements (see University GER listing).

II. The Following Curriculum:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 111</td>
<td>Concepts of Biology</td>
<td>3</td>
</tr>
<tr>
<td>Biol 150</td>
<td>General Biology I</td>
<td>4</td>
</tr>
<tr>
<td>Biol 151</td>
<td>General Biology II</td>
<td>4</td>
</tr>
<tr>
<td>Biol 312</td>
<td>Evolution</td>
<td>3</td>
</tr>
<tr>
<td>Biol 332</td>
<td>General Ecology</td>
<td>4</td>
</tr>
<tr>
<td>Biol 431</td>
<td>Wildlife Management</td>
<td>4</td>
</tr>
<tr>
<td>Biol 438</td>
<td>Fisheries Management</td>
<td>3</td>
</tr>
<tr>
<td>Biol 442</td>
<td>Physiology of Organs and Systems</td>
<td>4</td>
</tr>
<tr>
<td>Biol 470</td>
<td>Biometry</td>
<td>3</td>
</tr>
<tr>
<td>Biol 336</td>
<td>Systematic Botany</td>
<td>4</td>
</tr>
<tr>
<td>Biol 432</td>
<td>Animal Behavior</td>
<td>3</td>
</tr>
<tr>
<td>Biol 433</td>
<td>Population Biology</td>
<td>3</td>
</tr>
<tr>
<td>Biol 438</td>
<td>Anatomy and Adaptations Lab</td>
<td>2</td>
</tr>
<tr>
<td>Biol 441</td>
<td>Vertebrate Zoology</td>
<td>3</td>
</tr>
<tr>
<td>Biol 470</td>
<td>Biometry</td>
<td>3</td>
</tr>
<tr>
<td>Biol 330</td>
<td>Population Genetics</td>
<td>3</td>
</tr>
<tr>
<td>Biol 333</td>
<td>General Ecology</td>
<td>3</td>
</tr>
<tr>
<td>Biol 334</td>
<td>Ecology Lab</td>
<td>3</td>
</tr>
<tr>
<td>Biol 338</td>
<td>Plant Form and Function</td>
<td>3</td>
</tr>
</tbody>
</table>

III. Required in other departments:

- Biol 121-121L: General Chemistry I and Lab (4)
- Biol 122-122L: General Chemistry II and Lab (4)
- Biol 240/240L: Organic Chemistry (4)
- Comm 110: Fundamentals of Public Speaking (3)

Courses

Note: all biology courses that count as upper-division labs are marked with asterisk.*

**MINOR IN BIOLOGY**

Required 20 hours, including:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 150</td>
<td>General Biology I</td>
<td>4</td>
</tr>
<tr>
<td>Biol 151</td>
<td>General Biology II</td>
<td>4</td>
</tr>
<tr>
<td>Biol 150L</td>
<td>General Biology I Lab</td>
<td>2</td>
</tr>
<tr>
<td>Biol 151L</td>
<td>General Biology II Lab</td>
<td>2</td>
</tr>
</tbody>
</table>

12 hours of Advanced Courses with at least one course in each of the three basic areas of Biology (Cellular/Subcellular, Organismal, Population and Community Biology). No more than one UND biological sciences course from outside the department may be petitioned toward completion of this minor.

**Advanced Courses**

Biology 150, 150L, 151 and 151L, or equivalent are prerequisites for all 300 and 400 level courses listed below.

**312. Evolution**
- 3 credits. A study of the processes that have led from the origin of life to the diverse patterns and forms of life observable today. S

**315. Genetics**
- 3 credits. An introduction to genetics, with emphasis on classical genetic analysis and the biochemistry of gene transmission, expression and regulation. S

**322. General Ecology**
- 3 credits. Prerequisite: course in systematics desirable. A study of the relationships of organisms to their biotic and abiotic environments. F

**332L. General Ecology Laboratory**
- 1 credit. Prerequisite or co-requisite: Biol 332. Field projects and laboratory exercises to complement Biol 332. F

**333. Population Biology**
- 3 credits. Principles of population genetics, population ecology, and evolution in plants and animals. S

**336L. Systematic Botany**
- 4 credits. Structure and classification of vascular plants with emphasis on field studies. F

**338. Animal Behavior**
- 2 credits. Studies in animal social behavior. The influences of environmental factors on behavior is emphasized. S

**338L. Animal Behavior Laboratory**
- 2 credits. Prerequisite or co-requisite: Biol 338. Laboratory studies of animal behavior including a student research project using live animals. S

**341. Cell Biology**
- 3 credits. Prerequisite or Corequisite: Chem 122. Description of processes common to life at the cellular level including: biochemical and structural organization, membrane function, motility, signal transduction, growth, division and genetic regulation of the cell. S

**341L. Cell Biology Laboratory**
- 1 credit. Prerequisite or co-requisite: Biol 341. An introduction to cell biology. S

**350. Plant Form and Function**
- 3 credits. Prerequisite: Biol 150/151 or permission of instructor. Structure and function of plants at the cellular, tissue, and whole plant levels. Topics will also include ecological adaptations and plant-derived products. S

**363. Entomology**
- 4 credits. Structure, function, life history, classification, habits and distribution of insects. F

**364. Parasitology**
- 2 credits. Classification, structure, functions, and life-cycles of parasites having importance to human, wildlife and veterinary health. F

**364L. Parasitology Laboratory**
- 2 credits. Prerequisite or co-requisite: Biol 364. A basic parasitology laboratory to complement Biol 364. F
Business Administration (BAdm)  
MINOR IN INTERNATIONAL BUSINESS  
(For Business Majors Only)  

The College of Business and Public Administration provides undergraduate business students with the opportunity to earn a minor in international business. The minor requires a minimum of 24 semester hours: nine hours from various international business courses, nine hours from various arts and sciences courses focused on global issues, and achievement of a Level II proficiency in a language (8 hours) or approved study abroad (6 hours).  

Required 24 hours, including:  
1. Completion of 9 hours from the following  
   Account 380 .................................................. International Accounting (3)  
   Econ 338* .................................................. International Economics (3)  
   Econ 380* .................................................. Global Economic Development (3)  
   Econ 438* .................................................. International Money and Finance (3)  
   Fin 420 ...................................................... International Financial Management (3)  
   Mgt 420 ...................................................... Multinational Management (3)  
   Mkt 325** .................................................. International Marketing (3)  
   Mkt 425** .................................................. Current Prospectives in Global Marketing (3)  
   * only one of the above economic courses may be used.  
   ** only one of the above marketing courses may be used.  
2. Completion of 9 hours from the following  
   Anth 171 .................................................. World Regional Geography (3)  
   Hist 102 .................................................... Western Civilization II (3)  
   Pol Sci 220 .................................................. Comparative Politics (3)  
3. Completion of Level II Proficiency in a language (8 hours) or approved university study abroad (6 hours).  
4. Completion of B.A. or B.Acc. degree.  

Courses  
The College of Business and Public Administration offers two courses under the BAdm prefix that are available to any student on campus. Our Introduction to Business course fulfills general education requirements and provides students with an overview of all business topics. Personal Finance (BAdm 251) provides an overview of material helpful to learning to manage an individual’s budget and financial situation. BAdm 395 courses are generally restricted to business majors. The purpose of these courses is to provide special interest courses for particular groups of students. The course title and number may also be used for experimental courses which may later be established as regular offerings within departments or programs.  

101. Introduction to Business, 3 credits. A general education business course and the first step in a well-planned learning agenda that prepares students to become contributing citizens capable of making astute personal economic decisions. Topics covered include economic environment, global competition, entrepreneurship, general and human resources management, marketing, accounting, finance, information systems, and challenges of business careers. In order to foster students’ ability to think critically, the course emphasizes an integrated approach that provides opportunities for synergy among various business functions. The use of a virtual field trip to one major firm throughout the course illustrates the integration of the various business functions in a successful business enterprise. F, S, SS  

251. Personal Finance, 3 credits. The personal financial planning and management process: goal identification and budgeting; minimizing tax liability; uses and costs of various forms of credit/ buying, selling and/or leasing real estate, automobiles and other major items; life, health, property and income insurance; various investment options; the retirement planning process; and estate planning options. The role of financial planning professionals and financial planning as a career option are also discussed. F, S  

MINOR IN CHINESE STUDIES: CULTURE AND BUSINESS  

The minor in Chinese Studies: Culture and Business is offered through the College of Business and Public Administration and is open to all students across campus. The Chinese Studies minor provides a formal, structured, multidisciplinary approach to the study of modern China, its history, language, customs, culture and economy. The program targets students from all majors for in-depth examination of a region of growing global importance with special emphasis on the practical development of cross-cultural business skills. The minor requires a minimum or 23 credits in three different categories: Chinese language, area studies and business. It also requires fieldwork or an internship experience in China.  

Program Requirements: a minimum of 23 credits distributed between Parts A, B and C as follows:  

Part A: Language (8 credits)  
   Chin 101 First Year Chinese I .................................................. (4)  
   Chin 102 First Year Chinese II .................................................. (4)  

Part B: Area Studies (6 credits selected from the following courses)  
   Hist 362 Modern Chinese History .................................................. (3)  
   Rel 315 Religion and Philosophy in China and Tibet .................................................. (3)  
   Geog 483 Regional Geography China .................................................. (3)  
   Engl 299 ST Chinese Literature in Translation .................................................. (3)  

Part C: Business Studies (9 credits)  
   BAdm 316 Introduction to Business in China .................................................. (3)  

The Chinese Studies minor provides a formal, structured, multidisciplinary approach to the study of modern China, its history, language, customs, culture and economy. The program targets students from all majors for in-depth examination of a region of growing global importance with special emphasis on the practical development of cross-cultural business skills. The minor requires a minimum or 23 credits in three different categories: Chinese language, area studies and business. It also requires fieldwork or an internship experience in China.

University of North Dakota
Business Education and Vocational Marketing Education (ISBE/BOTE)

O’Keefe (Chair),

Brathen, Lawson-Body and Shirazi

The Bachelor of Science in Education degree with a major in Business Education is offered through the Department of Information Systems and Business Education in the College of Business and Public Administration. This degree prepares students to teach business education subjects in high schools, junior high schools, and vocational-technical schools in nearly every state in the United States. It prepares students to meet the professional requirements for certification as vocational coordinators of business and office education programs in North Dakota. A broad general education background essential for success in teaching is provided. A core of courses in business administration prepares students for careers in business as well.

College of Education and Human Development

The B.S.Ed. degrees require the completion of the College of Education and Human Development Program in Secondary Education. See College listing.

B.S.ED. WITH A MAJOR IN BUSINESS EDUCATION

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. ISBE Core Curriculum, including:

- Acct 200, 201: Elements of Accounting I & II (6)
- Acct 315: Business in the Legal Environment (3)
- Comm 110: Fundamentals of Public Speaking (3)
- Econ 201: Principles of Microeconomics (3)
- Econ 202: Principles of Macroeconomics (3)
- ISys 308: Information Resource Administration (3)
- ISys 305: Marketing Foundations (2)

AND EITHER

BAdm 316...China Then and Now (summer in China) ................................(3)
BAdm 319...Business Fieldwork in Shanghai (summer in China) .......... (3)

OR

BAdm 497...Internship in China (SU only) ...........................................(6)

Courses

316. Introduction to Business in China. 3 credits. An overview of China’s past, present and future with particular emphasis on cross-cultural business skills and doing business in China today. SS

318. China Then and Now. 3 credits. Offered only in China, this course examines China’s culture, customs, politics, and artistic heritage through existing monuments, temples, historic residences, city structures and artifacts. SS

319. Business Fieldwork in Shanghai. 3 credits. Offered only in China, this course exposes students to the practical problems associated with conducting business in China through lectures and fieldwork. SS

497. Internship in China. 1-6 credits. Approval of Director of International Business Programs required. On the job work experience (may be compensated or not) in various areas of business in China.

Business Economics

(See Economics listing)

BOTE 102........Keyboarding I...................................................................(1)
BOTE 152........Keyboarding II.................................................................(2)
BOTE 202........Keyboarding III .............................................................(2)
ISBE 120........Professional Communication for Business......................(3)
ISBE 444........Philosophy of Vocational Education ...............................(3)
ISBE 450........Senior Seminar ..............................................................(2)
Mgmt 300........Principles of Management ............................................(3)
Mkt 305........Marketing Foundations....................................................(3)

III. One of the Following Concentrations:

CONCENTRATION I—ACADEMIC BUSINESS AND OFFICE EDUCATION—For those preparing to teach all business subjects. The following additional courses are required for this concentration:

ISys 305........End-User Applications .........................................................(3)
ISys 315........Records and Information Management ................................(3)
ISBE 303........Methods of Teaching Business Subjects ................................(3-5)
BOTE 375........Administrative Office Procedures ....................................(3)
ISBE 421........Coordinating Techniques ..................................................(2)
ISBE 431........Career and Vocational Education of Special Needs Students. (3)

Electives...........Approved by Program Coordinator ....................................(6)

** Required for office education coordinators in reimbursable vocational programs.

B.S.ED. WITH A MAJOR IN VOCATIONAL MARKETING EDUCATION

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. The Following Curriculum:

- Acct 200, 201: Elements of Accounting I & II .....................................(6)
- Acct 315: Business in the Legal Environment ....................................(3)
- BOTE 102: Keyboarding I .................................................................(1)
- BOTE 152: Keyboarding II .................................................................(2)
- ISys 317: Fundamentals of Management Information Systems ...........(4)
- ISBE 303: Methods of Teaching Business Education—General Methods. (1)
- ISBE 303: Methods of Teaching Business Education—Entrepreneurship Methods. (1)
- ISBE 320: Professional Communication for Business .......................(3)
- ISBE 380: DECA-Student Leadership Practicum ...............................(3)
- ISBE 402: Curriculum Development in Vocational Marketing Education...................................................(3)
- ISBE 403: Professional Training Techniques in Business and Education...................................................(3)
- ISBE 421: Coordinating Techniques ..................................................(2)
- ISBE 431: Career and Vocational Education of Special Needs Students. (3)
- ISBE 444: Philosophy of Vocational Education ..................................(3)
- ISBE 460: Methods of Teaching Vocational Marketing Education ..........(1)
- ISBE 461: Principles of Management .................................................(3)
- Mkt 305: Marketing Foundations .......................................................(3)
- Mkt 311: Personal Selling .................................................................(3)
- Mkt 312: Advertising ........................................................................(3)
- Mkt 315: Retail Management .............................................................(3)

Minor in Vocational Marketing Education

Required 20 semester hours, including:

ISBE 380: DECA-Student Leadership Practicum ....................................(1)
ISBE 402: Curriculum Development in Vocational Marketing Education ...................................................(1)
ISBE 403: Prof Training Techniques in Business and Education ............(1)
ISBE 460: Methods of Teaching Vocational Marketing Education .......(1)
Minor in Office Administration

23 hours, including:
- BOTE 147: Word Processing Applications (3)
- BOTE 152: Keyboarding II (2)
- BOTE 202: Keyboarding III (2)
- ISys 305: End-User Applications (3)
- ISys 315: Records and Information Management (3)
- Mgmt 100: Principles of Management (3)

Elect eight hours from courses in ISBE/Sys and/or from the College of Business and Public Administration.

Minor in Secretarial Administration

23 hours, including:
- BOTE 147: Word Processing Applications (3)
- BOTE 152: Keyboarding II (2)
- BOTE 202: Keyboarding III (2)
- ISys 301: Methods of Teaching Business Subjects (3-5)
- ISys 305: End-User Applications (3)
- ISys 308: Information Resource Administration (3)

Elect five hours from courses in ISBE/Sys.

Minor in Business Education Teaching

22 hours, including:
- BOTE 147: Word Processing Applications (3)
- BOTE 152: Keyboarding II (2)
- BOTE 202: Keyboarding III (2)
- ISBE 301: Methods of Teaching Business Subjects (3-5)
- ISys 305: End-User Applications (3)
- ISys 308: Information Resource Administration (3)

Elect 3-4 hours in ISBE/Sys and/or from the College of Business and Public Administration.

Courses

Students who have had prior training in keyboarding are eligible for advanced placement. They should consult with a member of the Information Systems and Business Education faculty to determine appropriate course level.

BOTE 102: Keyboarding I. (CCN: BOTE) 1 credit. A half-semester course offering basic instruction and practice in learning to use proper fingering for touch operation of the alphanumeric keyboard, developing techniques and manipulative skills for operating the keyboard of data/word processing equipment, microcomputers, or computer terminals. F,S

BOTE 147: Word Processing Applications. (CCN: BOTE) 3 credits. Orientation to word processing and data processing software, hand-on applications, and skill development. F

BOTE 152: Keyboarding II. (CCN: BOTE) 2 credits. Prerequisite: BOTE 152 or equivalent. Skill development, rough drafts, statistical keyboarding, preparation of manuscripts, reports, legal forms, and display typing. S

BOTE 202: Keyboarding III. (CCN: BOTE) 2 credits. Prerequisites: BOTE 152 or equivalent. Additional keyboarding, keyboarding methods, and advanced keyboarding methods. S

ISBE 301: Methods of Teaching Business Subjects. (3-5) Elective. S


ISys 305: End-User Applications. (3) Elective. S

ISys 308: Information Resource Administration. (3) Elective. S

ISys 315: Records and Information Management. (3) Elective. S

Elect 2-3 hours in ISBE/Sys.

ISys 301: Information Systems. (3) Elective. S

Elective. 2-3 hours in ISBE/Sys.

Elect 3-4 hours in ISBE/Sys and/or from the College of Business and Public Administration.

Chemical Engineering (ChE)

Erjavec (Chair), Kolodka, Mann, Muggli, and Seames

The department’s primary objective is the education of undergraduate students so that, upon graduation, they are prepared to take responsible entry-level positions in a wide range of industries. These include not only the traditional chemical and petroleum processing, but also such “things” as biotechnology, consumer products, electronic materials, energy, food, polymers, pulp and paper, and the environment. They may be engaged in research, teaching, development, manufacturing, technical support, marketing, sales or project engineering, and frequently enter engineering management later in their careers. In addition, the prescribed curriculum provides a sound, technically basic general education for those graduates who wish to pursue other professions such as medicine, law and business. Research and professional activities by members of the faculty, conducted in collaboration with graduate and undergraduate students, provide training for our students on how to succeed as a researcher.

To help meet our primary objective, the department has established the following as its educational objectives:

- Graduates have the knowledge and skills required to analyze and solve problems related to the field of chemical engineering and communicate these results in verbal and written form to a diverse audience.
- Graduates are prepared to take entry-level positions in the chemical process and broadly related industries and demonstrate responsibility, ownership, and accountability for their work.
- Graduates have a thorough grounding in fundamentals, allowing them to obtain advanced degrees in chemical engi
neering or to pursue other professional interests such as medicine or law.

- Graduates are qualified to practice the profession of chemical engineering in a broad spectrum of industries.
- Graduates understand the role of chemical engineering as a profession and their role in addressing societal issues.

See Combined Degree Program under the School of Engineering and Mines section for additional details.

The core of the program is a strong technical curriculum, whereby the fundamentals of the physical sciences, mathematics, and chemical engineering are learned. This core is complemented by general courses in other engineering disciplines to provide greater exposure to the engineering profession and to help prepare the students for professional registration. Five of the engineering courses are electives, which gives each student the opportunity to tailor the program to his/her individual interests such as environmental concerns, materials, bio-processes, etc. Other prescribed courses include topics such as economics and statistics. The program also gives students a chance to become proficient in skills such as computer use, oral and written communication, and team work. The undergraduate program culminates in a senior capstone design course in which the students bring together all they have learned as they work in teams on a process design and evaluation project. UND’s program is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET).

Practical, hands-on experience is gained in laboratories distributed throughout the undergraduate program. Lab experiments form a significant part of each student’s learning beginning immediately in first year chemistry and continuing through the curriculum. In addition to university experiences, which include opportunities to conduct research, students are encouraged to spend time working in the engineering profession via summer internships or cooperative education.

Besides the technical education embodied in the program, there is a strong required general education component including a cultural elective. This is included to round out the individual’s university experience, and help prepare them for a full life, not just a career. There are also many extracurricular activities available (including professional societies, honor societies, sports and clubs) to enhance the enjoyment of the time spent at UND and to develop important friendships and leadership and team building skills.

One of the main characteristics of this department, which distinguishes it from most other chemical engineering programs around the country, is the commitment to building a strong rapport between the students and faculty. We are able to maintain close interaction to university experiences, which include opportunities to conduct research, students are encouraged to spend time working in the engineering profession via summer internships or cooperative education.

To allow qualified students to complete both undergraduate and graduate degrees in one year beyond that required to receive the baccalaureate degree alone, the department offers combined Bachelor of Science in Chemical Engineering (BSChE)/Master of Science (with a major in chemical engineering) and BSChE/Master of Engineering degrees. For more detailed information, see Graduate School section.
The Chemistry Department of the University has been approved by the Committee on Professional Training of the American Chemical Society. This means that the teaching staff, curriculum, equipment, library, and other facilities of the Department meet the standards established by the Society for the proper undergraduate training of chemists. Students who complete the work for the professional degree, Bachelor of Science in Chemistry, will upon graduation and certification by the Chairman of the Department, receive a special certificate from the Society. Certified graduates are eligible to become Members of the American Chemical Society; other chemistry graduates may become Associate Members and Members after three years of professional experience in chemistry.

Students who wish to have the best preparation for graduate work or for an industrial position in chemistry should follow the program leading to the Bachelor of Science in Chemistry. Students who desire a course of study which is less concentrated in chemistry in order to prepare themselves for advanced work in other fields should pursue the program leading to the B.S. degree with a major in chemistry. Those students who wish to prepare themselves for teaching in High School may pursue the program leading to the B.S. degree with a major in chemistry in the College of Arts and Sciences and take additional courses in the Department of Teaching and Learning to qualify for teaching certification. The specific course requirements for each of these major programs are listed below.

**Graduate Study**

The Department of Chemistry offers graduate programs leading to the degrees of Master of Science and Doctor of Philosophy with majors in inorganic chemistry, organic chemistry, physical chemistry and analytical chemistry. In order to pursue graduate work in chemistry, the student must have the baccalaureate degree with a major in chemistry. For more detailed information, see the Graduate School Bulletin.

### College of Arts and Sciences

#### B.S. IN CHEMISTRY

Required 125 credits (16 of which must be numbered 300 or above and 60 of which must be from a 4-year institution) including:

I. **General Education Requirements** (see University GER listing).

II. **The Following Curriculum**:

   - **Major Requirements**—53 hours including:

     **FRESHMAN YEAR**

     - Fall: Chem 121, 121L, General Chemistry I & Lab ............ (4)
     - Spring: Chem 122, 122L, General Chemistry II & Lab .......... (4)

     **Sophomore Year**

     - Fall: Chem 306, 306L, Introduction to Organic and Biochemistry .................................................. (3)
     - Spring: Math 165, Calculus I .................................... (4)

     **Junior Year**

     - Fall: ChE 306, 306L, Introduction to Organic and Biochemistry .................................................. (3)
     - Spring: Chem 341, 341L, Organic Chemistry I & Lab .......... (5)

     **Senior Year**

     - Fall: Math 465, 465L, Separations ................................. (3)
     - Spring: ChE 411, Chemical Engineering Plant Design I .......... (3)

   - **Elective** ..................................................................... (5) (9)

   - **Total Hours** .......................................................... 16 16

   **With permission of the advisor, a student may substitute English 120 if English 125 is not available.

   **If a student is not ready for Math 165, the math sequence may be moved back.

### Chemistry

(Chem)

Abrahamson (Chair), Ballintine, Banerjee, Delbride, Hoffmann, Kozlak, Pierce, Shay, Smolikova, Stahl, Thomasson, and Tilotta

- **Introduction to Transport Phenomena**, 4 credits. Prerequisite: Math 266 or concurrent enrollment and Physics 252. An analytical study of the transport of momentum, energy and mass. Derivation and utilization of the differential equations of change.

- **Unit Operations in Chemical Engineering**, 3 credits. Prerequisites: ChE 201* Application of the principles of momentum and heat transfer from a unit operations perspective.

- **Chemical Engineering Laboratory II**, 2 credits. Prerequisites: ChE 301 or concurrent enrollment. Experiments illustrating physico-chemical principles and transport phenomena.

- **Chemical Engineering Laboratory III**, 3 credits. Prerequisites: ChE 331 and Chem 465 or concurrent enrollment. Experiments illustrating physico-chemical principles and transport phenomena.

- **Basic Experimental Strategies**, 1 credit. Corequisite: ChE 332. Basic experimental strategies for the empirical study of relationships between variables. Analysis of resulting data to find significance of effects.

- **Cooperative Education**, 1-8 credits repeatable to 24. Prerequisite: Admission to the chemical engineering degree program. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement among student, department, and employer. S/U grading only. F.S.S.

- **Chemical Engineering Thermodynamics**, 4 credits. Prerequisites: ChE 201* and Chem 465. Thermodynamics applied to chemical engineering with emphasis on computational work, including thermodynamic laws, chemical equilibria and pressure-volume-temperature relationships.

- **Separations**, 3 credits. Prerequisite: ChE 201* and corequisite: ChE 306. Theory and application of rate-based and equilibrium-staged separations.

- **Chemical Process Dynamics**, 3 credits. Prerequisite: Math 266. Dynamics and control of chemical processes and of systems of reactors and distillation columns.

- **Chemical Engineering Plant Design I**, 3 credits. Prerequisites: ChE 306, 403 and 405 and completed or concurrently enrolled in ChE 421 and Engr 460. Introduction to how projects are executed in the process industries, including an understanding of what constitutes preliminary process design, preliminary cost/economic assessment, and the typical drawings and other deliverables produced during the scoping phase of process plant design. There is a particular emphasis on safety considerations in design.

- **Chemical Engineering Plant Design II**, 3 credits. Prerequisite: ChE 411. Proficiency is gained in the development of the preliminary design for a major chemical process. In addition, this course provides an introduction to the second stage of process design-the conceptual design process including an introduction to piping and instrumentation level design development, process control design and facility layout.

- **Chemical Engineering Reactor Design**, 3 credits. Prerequisites: Chem 465 and Math 266. Theory of chemical reaction rates. Design of batch, tubular, CSTR and catalytic chemical reactors.

- **Chemical Engineering Laboratory IV**, 3 credits. Prerequisites: ChE 306 and 405. Laboratory study of the unit operations of Chemical Engineering.

- **Materials and Corrosion**, 3 credits. Provides an introduction to the fundamental properties of metals and polymers, reviews the forms of metal corrosion and of polymer degradation. 4 credits.

- **Senior Honors Thesis**, 1-8 credits, repeatable to 9. Supervised independent study culminating in a thesis. F.S.S.

- **Chemistry (Chem)**

- **Abrahamson (Chair), Ballintine, Banerjee, Delbride, Hoffmann, Kozlak, Pierce, Shay, Smolikova, Stahl, Thomasson, and Tilotta**

- The Chemistry Department of the University has been approved by the Committee on Professional Training of the American Chemical Society. This means that the teaching staff, curriculum, equipment, library, and other facilities of the Department meet the standards established by the Society for the proper undergraduate training of chemists. Students who complete the work for the professional degree, Bachelor of Science in Chemistry, will upon graduation and certification by the Chairman of the Department, receive a special certificate from the Society. Certified graduates are eligible to become Members of the American Chemical Society; other chemistry graduates may become Associate Members and Members after three years of professional experience in chemistry.
one semester and Math 107 (also Math 103, if needed) should be taken in the first semester.  
1 Only Chem 330 (Spring) is acceptable; Chem 333 may not be substituted. Chem 330 and Chem 461 are offered in alternating Springs.  
2 Suggested electives are courses in Physics, Mathematics, Biochemistry, Biology, Languages, Computer Science, Chemical Engineering, Business Management, and Speech.  
3 Graduate level courses in Chemistry may be taken as electives.  
4 Chem 429 is offered only every second fall and so may need to be taken in the junior year.

**B.S. WITH MAJOR IN CHEMISTRY**
Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:
I. General Education Requirements (see University GER listing)
II. The Following Curriculum

Major Requirements — 96 hours including:

**Option A. Physical Science Emphasis**

<table>
<thead>
<tr>
<th><strong>FRESHMAN YEAR</strong></th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 121, 121L General Chemistry I &amp; Lab</td>
<td>(4)</td>
<td>(4)</td>
</tr>
<tr>
<td>Chem 122, 122L General Chemistry II &amp; Lab</td>
<td>(4)</td>
<td>(4)</td>
</tr>
<tr>
<td>Eng 110, 120L College Composition I</td>
<td>(3)</td>
<td>(3)</td>
</tr>
<tr>
<td>Eng 125 Technical and Business Writing</td>
<td>(3)</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 165 Calculus I</td>
<td>(4)</td>
<td>(4)</td>
</tr>
<tr>
<td>Math 166 Calculus II</td>
<td>(4)</td>
<td>(4)</td>
</tr>
<tr>
<td>General Education Electives</td>
<td>(5)</td>
<td>(5)</td>
</tr>
<tr>
<td>Total Hours</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

**SOPHOMORE YEAR**

| 'Chem 333 Intro Env Cln Forens Chem Analysis | (4) | (4) |
| Chem 341, 341L Organic Chemistry I & Lab | (5) | (5) |
| Chem 342, 342L Organic Chemistry II & Lab | (5) | (5) |
| Phys 251, 251L, 252, 252L University Physics I & II & Lab | (4) | (4) |
| Math 265 Calculus III | (4) | (4) |
| General Education Electives | (3) | (3) |
| Total Hours | 16 | 16 |

**JUNIOR YEAR**

| 'Chem 464, 465 Physical Chemistry I, II | (3) | (3) |
| 'Chem 461, 461L Instrumental Analysis | (5) | (5) |
| Level II Language | (4) | (4) |
| Electives | (9) | (9) |
| Total Hours | 16 | 16 |

**SENIOR YEAR**

| 'Chem 462 Physical Chem Laboratory | (3) | (3) |
| **Electives** | (12) | (15) |
| Total Hours | 15 | 15 |

1 With permission of the adviser, a student may substitute English 120 if English 125 is not available.

2 If a student is not ready for Math 165, the math sequence may be moved back one semester and Math 107 (also Math 103, if needed) should be taken in the first semester.

3 Either Chem 333 (Fall) or Chem 330 (Spring) should be taken, not both. Which one is taken affects the number of hours available for electives. Chem 330 and Chem 461 are offered only in alternate Fall semesters.

4 Suggested electives are courses in Mathematics, Biochemistry, Biology, Languages, Computer Science, Chemical Engineering, Business Management, and Speech.

5 Graduate level courses in Chemistry may be taken as electives.

**Option B. Health Sciences Emphasis**

<table>
<thead>
<tr>
<th><strong>FRESHMAN YEAR</strong></th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 121, 121L General Chemistry I &amp; Lab</td>
<td>(4)</td>
<td>(4)</td>
</tr>
<tr>
<td>Chem 122, 122L General Chemistry II &amp; Lab</td>
<td>(4)</td>
<td>(4)</td>
</tr>
<tr>
<td>Eng 110, 120L College Composition I</td>
<td>(3)</td>
<td>(3)</td>
</tr>
<tr>
<td>Eng 125 Technical and Business Writing</td>
<td>(3)</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 166 Applied Calculus I</td>
<td>(3)</td>
<td>(3)</td>
</tr>
<tr>
<td>Electives (Biology and/or GERs)</td>
<td>(9)</td>
<td>(6)</td>
</tr>
<tr>
<td>Total Hours</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

**SOPHOMORE YEAR**

| 'Chem 333 Introductory Environmental & Clin Forensic Chemical Analysis | (4) | (4) |
| Chem 341, 341L Organic Chemistry I & Lab | (5) | (5) |
| Chem 342, 342L Organic Chemistry II & Lab | (5) | (5) |
| Phys 211, 211L | (4) | (4) |
| Phys 212, 212L College Physics I & II & Lab | (4) | (4) |
| General Education Electives | (3) | (3) |
| Total Hours | 16 | 16 |

**JUNIOR YEAR**

| Chem 466 Survey of Physical Chemistry | (4) | (4) |
| BMB 301 Biochemistry Lecture | (3) | (3) |
| Level II Language | (4) | (4) |
| **Electives** | (12) | (5) |
| Total Hours | 16 | 16 |

**SENIOR YEAR**

| Chem 467 Survey of Physical Chem Laboratory | (2) | (2) |
| **Electives** | (13) | (15) |
| Total Hours | 15 | 15 |

1 With permission of the adviser, a student may substitute English 120 if English 125 is not available.

2 If a student is not ready for Math 146, Math 103 should be taken in the first semester. If a student would like the option to change into the B.S. in Chemistry or the B.S. with Major in Chemistry with emphasis for the Physical Science Option at a later date, be aware that Math 165, 166, and 263 are required. If a student who begins either the B.S. in Chemistry or the B.S. with Major in Chemistry with emphasis for the Physical Science Option wishes to change into the Health Science Option, Math 165 will substitute for Math 146.

3 Only Chem 333 (Fall) may be taken, not Chem 330 (Spring).

4 Suggested electives are courses in Physics, Mathematics, Biochemistry, Biology, Languages, Computer Science, Chemical Engineering, Business Management, and Speech.

**MINOR IN CHEMISTRY**

Required: A minimum of 20 semester hours unless all twenty are required for the student's current major. The 20 semester hours shall include one year of general inorganic chemistry with laboratory, a semester of analytical chemistry with laboratory, and one year of organic chemistry with laboratory. Chem 240 and Biochem 301 can be substituted for one year of organic chemistry. If all twenty hours are required by the student’s major, a minor may be achieved by taking 2 semester hours beyond the chemistry courses required for the major.

**Teacher Certification**

In addition to fulfilling the requirements of one of the minors listed above, students seeking secondary teacher certification in Chemistry must complete the Department of Teaching and Learning requirements in Secondary Education on page 155. Students seeking certification must also complete these additional courses:

| BMB 301 Biochemistry Lecture | (3) | (3) |
| Biol 150, 151 General Biology I & II | (6) | (6) |
| Biol 150L, 151L General Biology Lab I & II | (2) | (2) |
| 4 credits from: | | |
| Geol 101, 101L Physical Geology | (4) | (4) |
| Geog 121, 121L Physical Geography | (4) | (4) |

Chemistry majors seeking secondary certification must have an adviser both in the Chemistry Department and in the Department of Teaching and Learning. Formal admission to Teacher Education is normally sought while enrolled in T&L 325 (see Department of Teaching and Learning listing).

**Clinical Laboratory Science**

The Clinical Laboratory Science (CLS) program at UND offers a “4+1” curricu-
um that allows a student to receive a certificate from the CLS program with one year of additional study past a B.S. degree in Chemistry. Students would then be eligible to take a national certification examination to become a certified Clinical Laboratory Scientist. The CLS program requires a cumulative GPA of at least 2.8 for the B.S. program and a grade of C or better in certain specified courses. Please see the CLS program for more details.

**Courses**

| 110. Survey of Chemistry | 4 credits |
| 115. Introductory Chemistry | 3 credits |
| 115L. Introductory Chemistry Laboratory | 1 credit |

Corerequisite: Chem 115L Measurement, ionic and covalent compounds, chemical calculations, states of matter; energy, solutions, reactions, chemical bonding. Courses 115 and 115L are required in those cases where chemistry is considered a non-science major who wish to obtain a basic understanding of chemistry as applied in the world today. Does not serve as a prerequisite for any other chemistry course. Includes laboratory: F,S,F,S.
116. Introduction to Organic and Biochemistry, 3 credits. Prerequisite: Chem 115 or 121. Corequisite: Chem 116L. Does not satisfy the prerequisite for any advanced chemistry course. A second semester of general chemistry with emphasis on organic and biochemistry. Includes alkanes, alkenes, alkydes, aromatics, alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids, esters, amides, amides, carbohydrates, lipids, amino acids, proteins, and nucleic acids. Especially useful for students who wish to include organic and biochemistry in the first year. Required of students in the B.S. in Chemistry program. F, S

116L. Introduction to Organic and Biochemistry Laboratory, 1 credit. Corequisite: Chem 116. Required for all chemistry majors. F, S

121. General Chemistry I, 3 credits. Prerequisite: Math 102. Corequisite: Chem 121L. Math 103 or an appropriate score on the Placement Testing Program (PTP). Open to all students. No high school credit in chemistry required. Elementary principles and theories of chemistry, matter, measurement, atoms, ions, molecules, reactions, chemical calculations, thermodynamics, atomic theory, periodicity, gases. Required of all chemistry majors. F, S, SS

121L. General Chemistry I Laboratory, 1 credit. Corequisite: Chem 121. Labo- ratory to accompany Chem 121. Required of all chemistry majors. F, S, SS

122. General Chemistry II, 3 credits. Prerequisite: Chem 121. Corequisite: Chem 122L. Elementary principles and theories of chemistry: Intermolecular forces, liquids, solids, kinetics, equilibrium, acids and bases. Solution of chemistry, precipitation, ther- modynamics, electrolychemistry. Required of all chemistry majors. F, S, SS

122L. General Chemistry II Laboratory, 1 credit. Prerequisite: Chem 121L. Corequisite: Chem 122. Laboratory to accompany Chem 122. Required of all chemistry majors. F, S, SS


240L. Survey of Organic Chemistry Laboratory, 1 credit. Prerequisite: Chem 240. Corequisite: Chem 240L. Required for chemistry majors and chemical engineering majors. Principles and applications of chemical stoichiometry, equilibria, and spectroscopy to modern chemical analysis. S

333. Introductory Environmental, Clinical, and Forensic Chemical Analysis, 4 credits. Prerequisites: Chem 122 and Chem 122L or written permission of the instructor. For all science majors interested in using analytical chemistry techniques in a modern science laboratory. Principles of quantitative and qualitative chemical analysis as applied to environmental, clinical, and forensic science are covered. F

341. Organic Chemistry I, 4 credits. Prerequisite: Chem 122 with a grade of C or better or permission of the Chemistry Department. Corequisite: Chem 341L. Designed for science and pre-professional students. Required for chemistry majors. Structure and bonding, nomenclature, stereochemistry, functional groups, spectroscopy (NMR, IR, MS) for structure determination. F, S

341L. Organic Chemistry I Laboratory, 1 credit. Prerequisite: Chem 122L. Corequisite: Chem 341. Laboratory to accompany Chem 341. Required for chemistry majors. F, S


342L. Organic Chemistry II Laboratory, 1 credit. Prerequisite: Chem 341L. Corequisite: Chem 342. Required for all chemistry majors. Laboratory to accompany Chem 342. F, S

392. Special Problems in Chemistry, 1 to 3 credits. Prerequisite: consent of instructor. Total credits not to exceed 3. An opportunity for students to work on research problems under close faculty guidance. S/U grading only. F

397. Cooperative Education. 8 credits. May be repeated for a maximum of 12 credits. Prerequisites: one year of freshman chemistry with laboratory and either one of the following course sequences: Chem 341, 342. S/U grading.

429. Inorganic Chemistry Laboratory, 1 credit. Prerequisite: Chem 429. Corequisite: Chem 454. A course in laboratory techniques as applied to inorganic systems, including modern methods for synthesizing inorganic compounds and their analyses by spectroscopic and diffraction techniques. F, S

431. Selected Topics in Chemistry, 1-5 credits, repeatable with different topics. On demand.

454. Inorganic Chemistry II, 3 credits. Prerequisite: Chem 454 or 466. Chem- istry of coordination compounds in terms of modern theories and concepts. F

455. Spectroscopy and Structure, 3 credits. Prerequisite: Chem 342 or Chem 466. Corequisite: Chem 464. Students may satisfy the Chem 464 prerequisite by a Chem 466 prerequisite instead. Applications of spectroscopic techniques to the determination of molecular structure. F

460. Instrumental Analysis, 5 credits. Prerequisite: Chem 464 and 330 or 333. Recommended as an elective for chemical engineers interested in using instrumental methods for chemical analysis. Applications of contemporary instrumental techniques to problems of quantitative and qualitative analysis. F, S

461. Instrumental Analysis Laboratory, 2 credits. Corequisite: Chem 461. Laboratory experiences utilizing modern instrumental methods to address problems of quantitative and qualitative analysis. S

462. Physical Chemistry Laboratory, 3 credits. Prerequisites: Chem 464 and 465. Required for B.S. in Chemistry and B.S. with Major in Chemistry Physical Sci- ence Emphasis majors. The solution of chemical problems in the laboratory using mod- ern physical and analytical methods. F

463. Advanced Synthesis Laboratory, 3 credits. Prerequisites: Chem 462 or 467 and 455. Advanced synthetic, separatory and characterization methods currently used in modern laboratory practice will be emphasized. S


465. Physical Chemistry II, 3 credits. Prerequisites: Chem 341, Math 265, Phys 252. The use of energy concepts in studying and understanding the nature of matter, equilibria, reactivity, kinetics, criteria for reactions. F

466. Survey of Physical Chemistry, 4 credits. Prerequisites: Chem 342, Math 146 and Phys 212. Required for chemistry majors in the B.S. with Major in Chemistry with Emphasis in Health Sciences option. Survey of topics in physical chemistry with an emphasis for the life sciences. Topics include chemical thermodynamics, kinetics, introductory quantum mechanics, and spectroscopy. S

467. Survey of Physical Chemistry Laboratory, 2 credits. Prerequisite: Chem 466. The solution of chemical problems in the laboratory using physical and biophysical methods. F

488. Undergraduate Seminar, 1 credit. Corequisites: chem 492 or 463. Required for B.S. in Chemistry. Introduction to current research in chemistry and to professional chemistry seminar preparation. S


492. Senior Research, 2-6 credits. Prerequisite: Chem 342. Corequisite: Chem 462 or 467. May be repeated up to 6 credits. Total credits not to exceed 6. F, S, SS

Civil Engineering (CIEN)

The mission of the civil engineering program at the University of North Dakota is to provide students with a well-rounded civil engi- neering education. Graduates of the program will be prepared to function effectively in a wide range of professional settings such as engineering consulting firms, industries and governmental agencies. The civil engineering program emphasizes the areas of environmental engineering, geotechnical engineering, structural engineering, and wa- ter resources engineering. The required curriculum includes the funda- mentals for each of these areas and provides an opportunity for additional learning experiences with technical electives and a major design experience.

Teamwork, problem solving, and design exercises are interwoven throughout the curriculum; culminating in a two-semester, capstone design project during the senior year. Several courses include labora- tories which develop experimental, teamwork, and communication skills. Technical reports and/or presentations required in several courses develop knowledge of contemporary issues and life-long learning skills, as well as communication skills. Relevant computer software is used throughout the curriculum. Students are strongly encouraged to prepare for a professional license by taking the national Funda- mentals of Engineering (FE) exam prior to graduation. Students who excel academically are also well qualified to pursue graduate work in civil engineering or a related field.

See Combined Degree Program under the School of Engineering and Mines section for additional details.

The following are the educational objectives (EO) of the civil engineering program:

EO1 Graduates have the knowledge and skills required to analyze and solve problems related to the field of civil engineering.

EO2 Graduates practice civil engineering in a wide range of professional settings including consulting firms, govern- ment agencies and industries.
B.S. IN CIVIL ENGINEERING

Required 135 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. The Following Curriculum

Freshman Year

<table>
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<tr>
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<tr>
<td>Chem 122, 122L General Chemistry Lab</td>
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<tr>
<td>Biol 150, 150L General Biology Lab</td>
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</tr>
<tr>
<td>Engl 110 College Composition I</td>
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<tr>
<td>Engl 101 Graphical Communication</td>
<td>3</td>
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<tr>
<td>Engl 200 Computer Applications in Engg</td>
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<tr>
<td>Phys 165, 165L Calculus I &amp; II</td>
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<tr>
<td>Math 165, 165L Calculus I &amp; II</td>
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<tr>
<td>Math 251, 251L University Physics Lab</td>
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<td>Art 215 Technical &amp; Business Writing</td>
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Sophomore Year

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<td>Econ 201 Principles of Microeconomics</td>
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<td>Econ 210 Introduction to Business and Economic Statistics</td>
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<td>Engl 125 Technical &amp; Business Writing</td>
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<td>Engl 129* College Composition II</td>
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<td>Eng 201 Statics</td>
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<td>Eng 202 Dynamics</td>
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<td>Eng 203 Mechanics of Materials</td>
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<td>Math 265 Calculus III</td>
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<td>Math 266 Elementary Differential Equations</td>
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<td>Phys 252, 252L University Physics Lab</td>
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Junior Year

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<tr>
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<td>CIEN 306 Fluid Mechanics</td>
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<td>ME 308 Fluid Mechanics</td>
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<tr>
<td>CIEN 351 Structural Mechanics</td>
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<tr>
<td>CIEN 412 Soil Mechanics</td>
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<td>CIEN 421 Hydrology</td>
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<td>CIEN 423 Hydraulic Engineering I</td>
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<td>CIEN 431 Environmental Engineering I</td>
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<tr>
<td>CIEN 451 Steel Design</td>
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<td>EE 206 Circuit Analysis</td>
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<td>IT 211 Electric Circuits and Devices</td>
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<td>Engl 460 Engineering Economy</td>
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<tr>
<td>Geol 203 Geology for Engineers</td>
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<tr>
<td>Geol 101** Introduction to Geology</td>
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<td>Social Science</td>
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Senior Year

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<tr>
<td>CIEN 414 Foundation Engineering</td>
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<td>CIEN 416 Transportation Engineering</td>
<td>(3)</td>
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<tr>
<td>CIEN 412 Environmental Engineering II</td>
<td>(3)</td>
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<tr>
<td>CIEN 444 Contracts and Specifications</td>
<td>(3)</td>
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<tr>
<td>CIEN 473 Reinforced Concrete</td>
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<tr>
<td>CIEN 482 Civil Engineering Design</td>
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<tr>
<td>CIEN 483 Civil Engineering Design</td>
<td>(2)</td>
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<tr>
<td>Phil 370 Ethics in Engineering</td>
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</table>

Technical Elective....................... (3)
Social Science......................... (3)

* Students are encouraged to take Engl 125.
** Students are encouraged to take Geol 203.

Courses

201. Introduction to AutoCAD for Civil Engineers. 1 credit. Prerequisite: Engr 101. The course introduces the basic functions of the 2D capabilities of the AutoCAD software. The course uses a combined lecture and laboratory format to teach the fundamental AutoCAD drawing techniques. Students will have access to AutoCAD software through the civil engineering computer laboratory.


306. Fluid Mechanics, 3 credits. Prerequisite: Phys 251 and Math 265. Fluid properties, fluid statics and dynamics, transport theory and transport analogies, conservation of mass, energy, and momentum; dimensional analysis; boundary layer concepts; pipe flows; compressible flow; open channel flow.

313. General Surveying, 3 credits. Prerequisite: Math 165. Measurements of distances and angles; EDM, satellite and inertial systems; triangulation; differential leveling, horizontal curves, vertical curves; traverse surveys; U.S. public land surveys; earthwork; boundary surveys; construction surveys.

351. Structural Mechanics, 4 credits. Prerequisite: Engr 203. Reactions, shear and bending moment, plane and space frames, deflections, virtual work, energy methods, approximate analysis, consistent deformations method, slope deflection and moment distribution methods, introduction to matrix methods. Use of computer for analysis.

397. Cooperative Education. 1-3 credits repeatable to 24. Prerequisite: Admission to the civil engineering degree program or consent of advisor. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement among student, department and employer. F,S,SS

412. Soil Mechanics, 3 credits. Prerequisite: Engr 203. Principles of soil mechanics including weight-volume relationships, classification, compaction, effective stress, permeability and seepage, consolidation, shear strength, and site exploration. Laboratory exercises include index properties, grain size distribution, permeability, moisture density relations, shear strength, and consolidation.

414. Foundation Engineering, 3 credits. Prerequisites: CIEN 412. Soil improvements and ground modifications, soil exploration and sampling, bearing capacity, spread footings, mat foundations, settlement analysis, drilled shaft and pile foundations, foundations on difficult soil.

416. Transportation Engineering, 3 credits. Prerequisite: CIEN 412. Transportation systems, transportation planning and future developments, design and analysis of transportation facilities including traffic operations, highway geometry, and pavement.

421. Hydrology, 3 credits. Measurement, interpretation, analysis and application of hydrologic data; precipitation, evaporation and transpiration; run off water graphs; routing methods, groundwater, snow hydrology. Computer applications.

423. Hydraulic Engineering, 3 credits. Prerequisite: CIEN 306. Fluid statics and dynamics; open channel flow; transitions and controls; hydraulic structures; hydraulic power conversion. Laboratory: Laboratory techniques and model studies; calibration principles and fluid measurements; open channel; pipeline and hydraulic machinery experiments.


432. Environmental Engineering II, 3 credits. Prerequisite: CIEN 306. Water distribution networks, mass curve analysis, wastewater collection systems, pumping systems for water and wastewater, system design project, computer-assisted design, confined spaces.

434. Environmental Engineering Laboratory, 4 credits. Physical, chemical and biological methods used in environmental engineering, water chemistry, instrumental methods, lab tours. On demand.


444. Contracts and Specifications, 3 credits. Engineering contracts and specification essentials, legal aspects of engineering practice and employment; professional practice issues; procurement of work, governmental regulations.

451. Steel Design, 3 credits. Prerequisite: CIEN 351. Selection of sections, bolted and welded connections, beams, trusses, bolted-plate structural members, fatigue of structural members and introduction to plastic design.

452. Reinforced Concrete, 3 credits. Prerequisite: CIEN 351. Materials and specifications, axially and eccentrically loaded columns, strength beam theory, shear stresses, one-way slabs and footings.

462. Civil Engineering Design, 2 credits. Prerequisites: CIEN 351, 412, 423, and 431. Comprises CIEN 432 and 451. This is a comprehensive design course which
integrates the engineering design and engineering science components of previous and ongoing coursework into a major design experience, incorporating engineering standards and realistic constraints. Team project design projects in the areas of environmental, geotechnical, structures, water resources, etc. Group preliminary design reports and individual presentations. F.

483. Civil Engineering Design, 2 credits. Prerequisite: CIEN 482. This is the second of a two-course sequence in Civil Engineering design and is a continuation of CIEN 482. Coursework addresses design and professional practice issues. Student teams perform detailed design analyses, prepare a final design report and give an oral presentation on their final design. S.

490. Special Topics, 1 to 3 credits. Prerequisite: Departmental approval. Investigation of special topics dictated by student and faculty interests. F.S.

Clinical Laboratory Science (CLS)

M.A. Sens (Chair), A.W. Bruce (Program Director), Coleman, Larson, Kuntz, Paur, and Schill

http://www.med.und.nodak.edu/depts/cls

Clinical Laboratory Scientists, sometimes referred to as Medical Technologists, are key members of the health care team. They are concerned with the study and practice of diagnostic medicine and generate accurate and reliable test results in chemistry, hematology, immunology, immunohematology and microbiology. The results provide valuable information used in the diagnosis and treatment of disease. Employment opportunities exist not only in hospitals and clinics, but also in physician offices, government agencies, industry, research, the armed forces and health related facilities. A severe shortage of laboratory scientists exists and has generated a large demand for new graduates. In addition to immediate employment opportunities, many graduate attend medical school or pursue graduate degrees in science, management or education.

The University of North Dakota has offered a degree in clinical laboratory science since 1949. The Clinical Laboratory Science (CLS) program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS), which is located at 8410 West Bryn Mawr, Suite 670, Chicago, IL 60631.

School of Medicine and Health Sciences

B.S. in Clinical Laboratory Science

The CLS degree includes two years of pre-professional (freshman and sophomore) education followed by two years of professional (junior and senior) coursework. Application for advancement to the professional education component is made during the second semester of the sophomore year. Applicants to the professional program must have a cumulative GPA of at least 2.8 and no more than one D in any math or science course. Exceptions for acceptance and continuance may be made by petition to the CLS Professional and Academic Standards Committee. During the second year of the professional curriculum (senior year), students register for courses in the summer, fall and spring semesters.

A program fee of $500 per semester during the professional curriculum is assessed to all full-time students. Part-time students will have the CLS fee pro-rated according to the total CLS credits taken during each semester.

Required 130 credits (of which must be numbered 300 or above, and 60 credits of which must be from a four-year institution) including:

I. General Education Requirements (see University GER listing).

<table>
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<th>Course</th>
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<tr>
<td>Engl 110</td>
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<td>Bio 150 &amp; 150L</td>
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Chem 121 & 121L, General Chemistry I and Laboratory (4)
Math 103 or 104, College Algebra or Finite Math (3)

SECOND SEMESTER

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<td>Biol 151</td>
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<td>Comm 110</td>
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<td>Chem 122 &amp; 122L, General Chemistry II and Laboratory (4)</td>
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<tr>
<td>Engl 120 or 125, College Composition II or Technical and Business Writing (3)</td>
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Senior Year

FIRST SEMESTER

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<tr>
<td>Phys 241</td>
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<td>Bio 151</td>
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<td>Chem 122 &amp; 122L, General Chemistry II and Laboratory (4)</td>
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<tr>
<td>Comp 240 or 240L, Survey of Organic Chemistry and Laboratory (5)</td>
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<td>Engl 120 or 125, College Composition II or Technical and Business Writing (3)</td>
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<td>Humanities Elective (3)</td>
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I. General Education Requirements (see University GER listing).

Second Year

SUMMER SESSION

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<tr>
<td>MBio 202, Introduction to Medical Microbiology (3)</td>
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<td>Philosophy Elective (3)</td>
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<td>Humanities Elective (3)</td>
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Professional Curriculum Year 1

Junior Year

FIRST SEMESTER

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<td>MBio 202</td>
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SECOND SEMESTER

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Total Credits 130

4 + 1 Certification Program

The CLS program offers a 4 + 1 curriculum. A student is eligible for this program if they have earned a B.S. or B.A. degree and have completed the following prerequisite courses:

- General Chemistry 8
- Organic Chemistry 3
Biochemistry .......................................................... (3)
General Biology .................................................. (6)
Microbiology ....................................................... (3)
Anatomy ............................................................ (3)
Physiology ........................................................ (3)

CLS 234 Human Parasitology* ................................ (2)
CLS 301 Immunology* ........................................... (2)
CLS 325L Hematology Laboratory** ....................... (2)
* Available online

Upon successful completion of the prerequisite coursework the 4 + 1 certificate student applies to the second year of the professional program. The applicant must have a cumulative GPA of at least 2.8, and no more than one D in any math or science course. Exceptions for acceptance and continuance may be made by petitioning the CLS Professional and Academic Standards Committee.

A program fee of $500 per semester during the professional curriculum is assessed to all full time students. Part time students will have the CLS fee pro-rated according to the total CLS credits taken during each semester.

Upon completion of the 4 + 1 certificate program the student will be eligible to take a national certification examination and become a certified Clinical Laboratory Scientist and/or Medical Technologist. The student receives an undergraduate certificate in CLS from UND upon successful completion of the program of study.

Professional Curriculum Year 2

SUMMER SESSION

CLS 470...........Clinical Immunohematology I ....................... (1)
CLS 471...........Clinical Immunohematology, Theory, Procedures, & Correlations ...................................................... (2)
CLS 472...........Clinical Laboratory I ................................. (1)
CLS 473...........Clinical Hemostasis .................................. (2)
CLS 474...........Clinical Microscopy & Uroanalysis ............... (2)
CLS 475...........Clinical Body Fluids ................................. (1)
CLS 476...........Clinical Hematology Theory ...................... (1)
CLS 477...........Clinical Immunohematology Theory .......... (1)
CLS 478...........Clinical Microbiology Theory & Laboratory ... (2)

FIRST SEMESTER

CLS 479...........Clinical Immunohematology II .................... (2)
CLS 480...........Clinical Immunology I ............................. (1)
CLS 481...........Clinical Hematology II ............................ (2)
CLS 482...........Clinical Laboratory II ............................. (1)
CLS 483...........Clinical Microbiology I .......................... (2)
CLS 484...........Clinical Laboratory III ............................ (1)
CLS 485...........Clinical Immunohematology III ................. (1)
CLS 486...........Clinical Immunology .............................. (1)
CLS 487...........Clinical Mycology ................................. (1)

SECOND SEMESTER

CLS 490...........Fin. & Qual. Management of the Cl. Laboratory .... (3)
CLS 491L...........Clinical Immunohematology I ................. (1)
CLS 492...........Clinical Immunohematology III ................. (2)
CLS 493...........Clinical Immunology II ........................ (3)
CLS 494...........Clinical Mycology II ............................. (2)

Western College Alliance for Clinical Laboratory Science (WCACLS) Education

The Clinical Laboratory Science program is affiliated with Bemidji State University, Bemidji, MN; Jamestown College, Jamestown, ND; Minot State University, Minot, ND; Montana State University, Bozeman, MT; University of Mary, Bismarck, ND; and the University of Montana, Missoula, MT. The program of study for the first three years at these colleges is aligned with the UND CLS program. Students from these institutions apply to the UND CLS program for their final year of study. Upon completion they receive a certificate from the University of North Dakota verifying completion of 12 months of clinical training in the UND NAACLS accredited program. They are then eligible for a degree in Clinical Laboratory Science or a related major from their respective institution.

B.S. Degree, 4+1 Certificate, and WCACLS Students (Professional Curriculum Year 2)

A summer practicum experience on the UND campus in Grand Forks, ND is required, followed by approximately seven months in a clinical laboratory of a medical center. There are special requirements prior to contact with patients and testing of patient specimens. Several states require a background check prior to work with patients and all clinical affiliates require specific immunizations and testing to be completed (or a signed liability waiver) before entrance to the medical facility. Students are responsible for additional costs that include: travel, housing, food, and summer lab course fees during the second year of the professional curriculum.

The program has clinical affiliation agreements with over 25 medical centers in North Dakota, Minnesota, Montana, Colorado and Oregon for the clinical experience. A complete list and description of the current clinical sites is available at http://www.med.und.nodak.edu/depts/cls.

The CLS program reserves the right to place on probation or to cancel the registration of any student whose performance in the classroom or clinical experience is unsatisfactory.

Program accommodations for qualified handicapped persons will be reviewed upon notification of a prospective student’s needs and limitations.

Articulation Program

Clinical Laboratory Technician (CLT) or Medical Laboratory Technician (MLT) graduates are encouraged to apply to the UND CLS program. A CLT/MLT graduate will be eligible for the transfer of up to 60 semester credits depending on the curriculum completed. Transfer credits allow the waiver of several science courses in the professional curriculum. The student’s record is evaluated and a recommendation made to the Registrar regarding the number of credits to be transferred and the science courses to be waived. The student may be eligible for a shortened professional program based on previous coursework, years of experience working in a clinical laboratory, and a competency assessment. A specific outline for the number of credits that will transfer has been incorporated into articulation agreements with numerous regional technical and community colleges. Contact the CLS program for additional information.

Online Courses

There are many courses offered by the CLS program through online or distance learning. The primary method of distance learning course delivery is WEB based and/or CD. Students participating in online coursework are required to have Internet access. Specific computer requirements are available from the CLS program.

Graduate Level Programs

A Master of Science (M.S.) degree with a major in CLS and a certificate program in CLS Management is available. The graduate level programs are described in the graduate section of this catalog and at http://www.med.und.nodak.edu/depts/cls.

Courses

The Clinical Laboratory Science program is part of the Division of Medical Laboratory Sciences in the Department of Pathology. The Clinical Laboratory Science (CLS) courses that are offered are listed below.

101. Orientation to Medical Laboratory Sciences. 2 credits. Introduction to the role, ethics, conduct, certification, education, employment, and fundamental knowledge and skills related to medical laboratory science. F

234. Human Parasitology. 2 credits. Prerequisites: Biol 101. Physiological aspects of human parasites, their symbiotic host parasite relationships and clinical diagnostic techniques. S

234L. Human Parasitology Laboratory, 1 credit. Prerequisite: Biol 101. Laboratory methods for the identification and diagnosis of human parasites. S

238. Computer and Statistical Application in Clinical Laboratory Science. 2 credits. Clinical applications of modern information systems, terminology, word pro-
cessing, data base, spreadsheet and statistical analysis including normal and binomial distribution, t-tests, chi square tests, analysis of variance, linear regression and correlation. S

301. Immunology. 2 credits. Principles of clinical immunology focusing on the cellular and molecular nature of antigens and immunoglobulins, the immune response, immunogenetics, and immune mediated disease. S


470. Clinical Immunohematology I. 1 credit. Practical application of modern transfusion techniques, component therapy, and quality assurance. SS

471. Clinical Chemistry Theory, Principles, Procedures, and Correlations. 2 credits. Theories and principles of clinical chemistry procedures are discussed as well as how the results of these procedures correlate to health and disease. SS

472. Clinical Laboratory I. 1 credit. Theory and practice of phlebotomy in the clinical setting, specimen processing, review of state and federal regulations, safety and biohazard compliance, interpersonal relationship skills. SS

473. Clinical Hemostasis. 2 credits. Physiologic mechanisms of normal human hemostasis as well as hereditary and acquired defects. Laboratory techniques performed and discussed are screening tests and specific assays for abnormalities, procedures to monitor therapeutic measures and practice and maintenance of current instrumentation. SS

474. Clinical Microscopy & Urinalysis. 2 credits. Theory, techniques and practice of microscopy and urinalysis with emphasis on identification of elements in the sediment. SS

475. Clinical Body Fluids I. 1 credit. Overview of the theory and practice in manual procedures of human body fluids. The body fluids to be discussed include: spinal, synovial and amniotic fluid, transtracheal and endotracheal, fetal specimens, gastric, sweat, and other body fluid secretions. SS

477. Clinical Immunohematology Theory. 1 credit. Theory of modern transfusion techniques, component therapy, and quality assurance. SS

478. Clinical Microbiology Theory and Laboratory. 2 credits. Groups of medically important bacteria are studied and correlated to laboratory practice in identification. Included in the discussions are antibiotic susceptibility testing, quality control, and methods of identification including rapid, automated, and traditional methods. SS


481. Clinical Chemistry I. 3 credits. Applied theory and practice in clinical chemistry at the clinical affiliate. F

482. Clinical Hematology I. 2 credits. Emphasis on interpective correlation of hematology findings and pathophysiology. Topics of current interest and advances in hematology. F

483. Clinical Laboratory II. 1 credit. Techniques and practice in routine phlebotomy at the clinical affiliate. Annually.

484. Clinical Microbiology I. 2 credits. Applied theory and practice in clinical microbiology at the clinical affiliate. F

485. Clinical Laboratory III. 1 credit. Observation, practice, or research in specialized areas or settings at the clinical affiliate. F

486. Clinical Immunology. 1 credit. Applied theory and practice in clinical immunology and serology at the clinical affiliate. F

487. Medical Mycology. 1 credit. Comparative morphology, physiology and pathogenicity of medically important fungi. Laboratory methods for identification emphasize interpretation and evaluation of results including the recognition of contaminating organisms. SS

490. Financial and Quality Management of the Clinical Laboratory. 3 credits. Corequisites: Enrollment in clinical practicum coursework. A capstone course designed to provide senior students with the skills to manage a clinical laboratory. The course brings together previous content with a focus on laboratory profitability, quality management, and quality improvement. Annually.

491. Clinical Chemistry II. 2 credits. Techniques and practice in clinical chemistry at the clinical affiliate. F

492. Clinical Immunohematology III. 2 credits. Techniques and modern transfusion practices at the clinical affiliate. S


495. Clinical Microbiology II. 2 credits. Techniques and practice in clinical microbiology at the clinical affiliate. S

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**School of Communication (Comm)**

**Rendahl (Director), Fiordo, Ganje, Hikins, Holden, Nitz, Rakow, and Shaler**

The School of Communication (SComm) offers a comprehensive, integrated curriculum in communication that focuses on how information processes and communication technologies affect and can benefit a diversity of local and global communities. It prepares undergraduate students for careers as ethical communicators with a broad understanding of contemporary communication issues and with skills that are adaptable to a variety of contexts.

One major, Communication, is offered leading to the Bachelor of Arts degree. A minor in Communication is also offered.

**Liberal Arts Emphasis.** Students are encouraged to acquire a broad general education in the arts and humanities, social sciences, and natural sciences. National accreditation rules for programs offering professional training in journalism and mass communication require students to earn a minimum of 80 semester credits outside the School. At least 65 of these credits must be in courses approved for the University’s general education requirements and those offered by the traditional liberal arts departments.

**Facilities and Special Programs.** The School has computerized writing, graphics, and editing laboratories, as well as its own reading room that houses a wide selection of daily and weekly newspapers and professional journals. The University’s Television Center facility is available for student training.

The School’s Communication Research Center conducts research on a variety of communication issues and problems.

The Native Media Center’s mission is to promote diversity in communication by enhancing awareness of Native American issues among media professionals and by attracting Native American students into journalism and communication careers. The activities include production of special publications and materials written by, about, and for Native peoples.

**Student Opportunities.** Students are encouraged to supplement classroom instruction through work on campus publications, a national award-winning television program, and supervised, professional internships.

Student organizations sponsored by the School include chapters of the American Advertising Federation, the Public Relations Student Society of America, and the Society of Professional Journalists. Another program sponsored by the School is the Northern Interscholastic Press Association, which serves high school journalism programs in North Dakota and northern Minnesota.

**Admission Requirements.** Admission to the College of Arts and Sciences does not automatically carry admission to the School of Communication. Students planning to pursue a major through the School should declare Pre-Communication as their intended major. In order to reach the next level, that of Admitted Major, Pre-Communication—and those who are pursuing an Admitted Minor status—must:

- Pass Comm 102 or 103 and Engl 110 with a grade of C or better
- Pass an English Proficiency Test administered by UND’s Testing Center
• Have a 2.50 overall GPA (which must be continued in order to take courses in Communication. At graduation, GPA must also be at least 2.50.)
• Have earned at least 24 semester credits
• Have his or her assigned faculty adviser approve a personal Plan of Study contract

Students are classified as Pre-Communication majors until they have completed these requirements. Additional information about the application process is available from the School’s Admissions and Advising Director.

Atting Admitted Major status opens many restricted classes. In addition, students are eligible for SComm scholarships when they are admitted majors.

Transfer Students’ Communication Credits. Communication students transferring into the School of Communication from other universities may bring in a maximum of nine communication credits, but no more than six of the nine may be in upper division.

College of Arts and Sciences
B.A. WITH MAJOR IN COMMUNICATION

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a four-year institution) including:

I. General Education Requirements (note: Communication pre-majors, admitted majors and admitted minors cannot count Communication courses toward these requirements.)

II. Liberal Arts Courses and others not in the Communication Major

Students must complete 80 hours of courses outside of the School, 65 of which must include GERs and traditional liberal arts credits. Traditional liberal arts departments include: Anatomy, Anthropology, Art, Biology, Chemistry, English, Fine Arts, Geography, Geology, History, Humanities, Honors, Indian Studies, Languages, Mathematics, Music, Peace Studies, Philosophy, Political Science, Physics, Psychology, Religion, Sociology, Theatre Arts, and Women Studies.

III. Major Requirements

Required minimum of 37, maximum of 45. Communication majors may not exceed 45 credits in the major within the 125 credits of graduation.

Level A: SURVEY

6 credits required
Comm 102...Communication and the Human Community.................................(3)
Comm 103...Information, Technology and Social Change................................(3)

Level B: SKILLS/THEORY

15 credits required, at least one course in each category

COMMUNITY category
Comm 110...Fundamentals of Public Speaking..................................................(3)
Comm 201...Visual Communication................................................................(3)
Comm 212...Interpersonal Communication.....................................................(3)
Comm 303...Principles of Public Relations..........................................................(3)
Comm 341...Advertising Creative Strategy..........................................................(3)
Comm 365...Small Group Discussion.................................................................(3)

INFORMATION category
Comm 200...Introduction to Media Writing.......................................................(3)
Comm 244...Reporting and Feature Writing.....................................................(3)
Comm 321...Advanced Journalistic Writing.....................................................(3)
Comm 322...Editing...............................................................................................(3)
Comm 352...Writing for Public Relations.............................................................(3)
Comm 353...Writing for the Electronic Media.......................................................(3)
Comm 366...Business and Professional Speaking..............................................(3)

TECHNOLOGY category
Comm 204...Graphic Design..............................................................................(3)
Comm 226...Photo Imaging................................................................................(3)
Comm 305...Publications....................................................................................(3)
Comm 306...Advertising Media Planning............................................................(3)
Comm 319...Digital Imaging................................................................................(3)
Comm 332...Television Studio Production............................................................(3)
Comm 354...Electronic Field Production............................................................(3)

Level C: THEORY/SKILLS

12 credits required, at least one course in each category

COMMUNITY category
Comm 300...Communication and Society.........................................................(3)
Comm 301...Psychology of Communication.........................................................(3)
Comm 310...Mediа and Diversity........................................................................(3)
Comm 328...Community Journalism................................................................(3)
Comm 401...Organizational Communication.................................................(3)
Comm 402...International/Intercultural Communication....................................(3)
Comm 403...Community Relations................................................................(3)
Comm 499...Special Topics..............................................................................(3)

INFORMATION category
Comm 308...Argumentation............................................................................(3)
Comm 313...Persuasion......................................................................................(3)
Comm 567...Classical and Modern Criticism......................................................(3)
Comm 404...Advertising and Society.................................................................(3)
Comm 405...Social Implications of Information Society.....................................(3)
Comm 410...Research Methods in Communication..........................................(3)
Comm 461...Political Communication...............................................................(3)
Comm 499...Special Topics..............................................................................(3)

TECHNOLOGY category
Comm 302...Popular Culture...........................................................................(3)
Comm 331...Survey of Broadcasting................................................................(3)
Comm 406...Media Consequences and Effects..................................................(3)
Comm 407...Communication Technologies and the Future............................(3)
Comm 412...Communication Law.....................................................................(3)
Comm 428...U.S. Media History.........................................................................(3)
Comm 499...Special Topics..............................................................................(3)

Level D: EXPERIENCE

3-5 credits (no more than 3 credits of 397 and 497 combined are allowed)
Comm 329...Practicum......................................................................................(3)
Comm 394...Individual Projects, Readings.........................................................(1-3)
Comm 397...Cooperative Education................................................................(1-3)
Comm 497...Internship......................................................................................(1-3)

Level E: PORTFOLIO

1 credit required
Comm 450...Senior Portfolio.............................................................................(1)

*NOTE: Additional pre-requisites may apply to some courses. Check individual course descriptions.

Teacher Certification

Students seeking secondary teacher certification in the School of Communication must complete the Department of Teaching and Learning Requirements in Secondary Education. School of Communication majors seeking secondary certification must have an adviser both in SComm and the Department of Teaching and Learning. Formal admission to Teacher Education is required and is normally sought while the student is enrolled in T&L 325. School of Communication students are required to take Comm 300, Communication and Society.

MINOR IN COMMUNICATION

Required: 24 credits
6 credits in Level A (Comm 102 and 103);
3 credits in Level B in each category of Community, Information, and Technology;
3 credits in Level C in each category of Community, Information, and Technology.

Internship or practicum courses will not count toward the minor. Minors must fulfill the admission requirements of the School of Communication. They must also earn a grade of C or better in all SComm courses and must maintain an overall GPA of 2.5.

Courses

102. Communication and the Human Community. 3 credits. An introduction to the important concepts and principles of human communication, with a focus on how humans create meaningful worlds to live in through shared language, shared visual perception and interaction processes. Examination of the conflicts and opportunities that can result from communication differences within and among communities, with particular emphasis on gender, race and ethnicity, age, sexual orientation, class and physical ability. F.S

103. Information, Technology and Social Change. 3 credits. Evolution of communication technology and the consequences for how people communicate and acquire information, including the impact of culture, economics and public policy on contemporary media practices. Current issues related to media content, access and effects are examined. F.S

110. Fundamentals of Public Speaking. 3 credits. The theory and practice of public speaking with emphasis on content, organization, language, delivery, and critical evaluation of messages. Additional emphasis on student performance stressing original thinking, effective organization, and direct communication of ideas. F.S,SS

120. Introduction to Media Writing. 3 credits. Prerequisites: Admitted Communication major. Keyboarding skills required. Introduction to writing in the various styles and forms required in journalism, advertising, broadcasting, public relations and speech communication. F.S

201. Visual Communication. 3 credits. An examination of the history and development of design in visual communication with emphasis on design components in
visual literacy. Images in news and advertising, photography, film and television are examined from theoretical, ethical, and critical perspectives. F

204. Graphic Design. 3 credits. Prerequisite: Comm 201. Admitted Communication major. An introduction to theory and practice of image-making for the media. Coverage of major structural theories including style, semiotics, and iconography in a historical, environmental and psychological context. Typography, corporate symbology, logos and spatial relationships are included. Emphasis on recognizing professional and cultural standards and conventions. Survey of critical and ethical thinking about visual decisions for communication professions. F,S

212. Interpersonal Communication. 3 credits. Introduces fundamental concepts of communication between individuals. Explores aspects of self expression and relationship communication. To give insights into the dynamics of interpersonal communication. To aid in the understanding of how people present themselves to other people, and how others perceive them in return. F,S,SS

301. Psychology of Communication. 3 credits. Prerequisite: Admitted Communication major. Introduction to the practice of photography. Film developing, print making, photographic composition. Emphasis on the purposes of photography. F

302. Popular Culture. 3 credits. Prerequisite: Admitted Communication major or instructor consent. Critical analysis of culture(s), their characteristics, and the relationship between media, interpersonal communication, and broader cultural patterns. A look at how popular culture works and influences the public and how everyday actions, objects and experiences affect us. A critical look at the ways in which culture is defined by such elements as fashion, shopping malls, television, film, music, newspapers and the internet. F

303. Principles of Public Relations. 3 credits. Examines public relations as a professional communication and management function, applications within a range of organizations, and PR’s impact on society and role in community-building. In-depth analysis of the PR campaign process, PR media and publicity. Ethical and legal considerations. S

305. Publications. 3 credits. Prerequisite: Comm 204, admitted Communication major. An overview of the print production process from concept to distribution. Includes publication conceptualization, design and production, budgeting, pre-press and printing processes. F

322. Photo Imaging. 3 credits. Prerequisite: Comm 226. Photo imaging and print. Instructor consent. Emphasis on the function and design considerations in producing media presentations. F, S

403. Community Projects and Readings. 1-3 credits. Prerequisite: Junior standing. School of Communication consent. Individual projects or directed study related to topics, issues or activities in the areas of journalism, speech or communication. F,S

406. Business and Professional Speaking. 3 credits. Prerequisite: Admission to the Communication major. Advanced study of rhetorical definition and style, and the application of those principles through preparation of business and professional speeches and speech manuscripts. F

407. Classical and Modern Criticism. 3 credits. Prerequisite: Admitted Communication major. A study of the ancient to contemporary development of rhetorical critical standards and practices in public speaking and persuasion. F

409. Individual Projects and Readings. 1-3 credits. Prerequisite: Junior standing. School of Communication consent. Individual projects or directed study related to topics, issues or activities in the areas of journalism, speech or communication. F,S

410. Organizational Communication. 3 credits. Prerequisite: Admitted Communication major or instructor consent. Analysis of communication behavior in formal organizations. Special attention given to organizational style, status, trust and conflict-management. Informal communication networks and rumor are studied. S

412. International/Intercultural Communication. 3 credits. Prerequisite: Admitted Communication major or instructor consent. Examination of communication across cultures within the context of the media. Topics addressed will include: history, literature, and culture of specific groups including racial, religious, and ethnic issues that affect communication patterns and outcomes. F

413. Community Relations. 3 credits. Prerequisites: Admitted Communication major or instructor consent. Examination of strategies organizations use to establish and maintain rapport with communities. Theoretical foundations, crisis and issues management, conflict resolution, promotional strategies and effective media relations. F

414. Advertising and Society. 3 credits. Prerequisites: Admitted Communication major or instructor consent. Examines and evaluates the social, ethical and economic aspects of advertising. Attention is given to appraising the effects of advertising on the consumer and society. F

415. Social Implications of the Information Society. 3 credits. Prerequisites: Admitted Communication major or instructor consent. Considers and evaluates different perspectives on the information society. Special emphasis on the implications and critiques to the optimistic scenarios of some futurists. Examines the implications of new means of creating, storing, manipulating and disseminating information. Discussion of whether or not the potential benefits will be realized. F

416. Media Consequences and Effects. 3 credits. Prerequisites: Admitted Communication major or instructor consent. Examines the ways in which people and societies are affected by media systems. Topics include Technology, History, Media Power and Control, Audiences and Use, Mass Communication, Mass Culture and Popular Culture. Uses a critical perspective to interpret the consequences and effects of media systems. F

417. Communication Technologies and the Future. 3 credits. Prerequisites: Admitted Communication major or instructor consent. Enables students to develop an in-depth understanding of new communication technologies and to explore their potential. Consideration of how media industries are being restructured, of the social conse-
Communication Sciences and Disorders (CSD)

Swisher (Chair), Biberdorf, Chamberlain, Fire, Glick, Madden, Rami, Schill and Seddoh

It is the general mission of the Department of Communication Sciences and Disorders to provide academic and clinical instruction, supervised clinical practicum, and research experience for students; to provide clinical services to individuals, groups, and agencies within the University and greater Grand Forks area; to provide professional leadership with local, state, and national organizations; to contribute to the body of knowledge concerning communication processes and communication disorders; and to serve the University through its governance. This mission is directed at meeting the interests and needs of the University of North Dakota constituency.

SPEECH, LANGUAGE AND HEARING CLINIC

The Clinic provides an opportunity for students to gain practical experience in speech and language evaluation and treatment procedures as student clinicians and provides a basis for research into the clinical process. The clinical practicum/research is under the direct supervision of departmental faculty who hold the Certificate of Clinical Competence of the American Speech-Language-Hearing Association. The Department of Communication Sciences and Disorders is accredited by the Council on Academic Accreditation of the American Speech-Language-Hearing Association.

Services provided include evaluation and remedial treatment of all types of speech handicaps, language disabilities, and hearing problems (including evaluations for hearing aid candidacy). Referrals to the Clinic may be made by anyone, and treatment is provided for individuals of all ages.

Majors

The undergraduate coursework in Communication Sciences and Disorders is grounded in the liberal arts education. The undergraduate degree is designed to prepare the student to become a lifelong learner, a critical thinker and problem solver. The coursework is also designed to prepare the undergraduate major to pursue professional and graduate work, including a graduate degree in Speech-Language Pathology or Audiology. The undergraduate degree in the field of communication disorders is required to work in this profession.

College of Arts and Sciences

B.A. WITH MAJOR IN COMMUNICATION SCIENCES AND DISORDERS

Required 125 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

  (Laboratory science requirement to be met by 4 credits of anatomy, biology or physics)

II. The Following Curriculum

A. Major Course Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSD 223</td>
<td>Phonetics</td>
<td>3</td>
</tr>
<tr>
<td>CSD 231</td>
<td>Anatomy &amp; Physiology of the Speech and Hearing Mechanism</td>
<td>4</td>
</tr>
<tr>
<td>CSD 235</td>
<td>Speech and Hearing Science</td>
<td>4</td>
</tr>
<tr>
<td>CSD 333</td>
<td>Articulation &amp; Phonological Development &amp; Disorders</td>
<td>4</td>
</tr>
<tr>
<td>CSD 343</td>
<td>Language Development</td>
<td>3</td>
</tr>
<tr>
<td>CSD 353</td>
<td>Language Disorders</td>
<td>3</td>
</tr>
<tr>
<td>CSD 365</td>
<td>Aging &amp; Communication Disorders</td>
<td>3</td>
</tr>
<tr>
<td>CSD 382</td>
<td>Introduction to Praxis</td>
<td>3</td>
</tr>
<tr>
<td>CSD 422</td>
<td>Neuroanatomy</td>
<td>3</td>
</tr>
<tr>
<td>CSD 425</td>
<td>Language, Multiculturalism and Communication Disorders</td>
<td>3</td>
</tr>
<tr>
<td>CSD 431</td>
<td>Introduction to Audiology</td>
<td>3</td>
</tr>
<tr>
<td>CSD 434</td>
<td>Aural Rehabilitation</td>
<td>3</td>
</tr>
<tr>
<td>CSD 437</td>
<td>Cleft Palate &amp; Other Orfacial Anomalies</td>
<td>3</td>
</tr>
<tr>
<td>CSD 460</td>
<td>Senior Seminar</td>
<td>1</td>
</tr>
<tr>
<td>CSD 483</td>
<td>Clinical Tests &amp; Measures</td>
<td>3</td>
</tr>
<tr>
<td>CSD 484</td>
<td>Clinical Practicum I: Speech-Language Pathology</td>
<td>2</td>
</tr>
<tr>
<td>CSD 485</td>
<td>Clinical Practicum II: Speech-Language Pathology</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Credit Hours 50

B. Major courses not required for B.A., but recommended:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSD 232</td>
<td>Survey of Communication Disorders</td>
<td>3</td>
</tr>
<tr>
<td>CSD 496</td>
<td>Special Problems in Communication Disorders</td>
<td>1-3</td>
</tr>
<tr>
<td>Comm 301</td>
<td>Basic Course in Computer Science</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours 11-13

C. Courses required in other departments:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psyc 241</td>
<td>Introduction to Statistics</td>
<td>4</td>
</tr>
<tr>
<td>Psyc 250</td>
<td>Developmental Psychology</td>
<td>4</td>
</tr>
<tr>
<td>Psyc 270</td>
<td>Abnormal Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Engl 209</td>
<td>Introduction to Linguistics</td>
<td>3</td>
</tr>
<tr>
<td>Math 103</td>
<td>College Algebra</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credit Hours 17

Course in Multicultural Education, such as Anth 171, 375 and 379 or IS 121, 130 and 345, or Psyc 421, or T&L 433. If desired, additional courses may be chosen with approval of advisor. The following courses are not approved for the B.A. in Communication Sciences and Disorders: CSD 232, CSD 353, CSD 431, CSD 434, and CSD 437.

D. Teacher Certification

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psyc 213</td>
<td>Educational Psychology</td>
<td>3</td>
</tr>
<tr>
<td>IS 121</td>
<td>Introduction to Indian Studies</td>
<td>3</td>
</tr>
<tr>
<td>CSD 425</td>
<td>Language, Multiculturalism and Communication Disorders</td>
<td>3</td>
</tr>
<tr>
<td>CSD 554</td>
<td>Clinical Practicum</td>
<td>4</td>
</tr>
</tbody>
</table>
Courses

101. American Sign Language I. 2 credits. This course is designed to teach functional American Sign Language (ASL) which can be used in everyday interactions. The grammar and vocabulary of ASL will be learned within the context of communicative activities. Topics relating to Deaf Culture will be discussed throughout the course. F

102. American Sign Language II. 2 credits. Prerequisites: CSD 101. This course is a continuation of ASL I. Students will be responsible for all information from the previous units. The grammar and vocabulary of ASL will be learned within the context of communicative activities. Topics relating to Deaf Culture will be discussed throughout the course. S

201. American Sign Language III. 2 credits. Prerequisites: CSD 101 and 102. This advanced course is a continuation of ASL I and II. Students will apply previous knowledge from ASL I, II, III and combine their vocabulary and understanding of the structure of ASL. This course is designed to teach functional American Sign Language which can be used in everyday interactions. The grammar and vocabulary of ASL will be learned within the context of communicative activities. Topics relating to Deaf Culture will be discussed throughout the course. S

103. Introduction to Practicum. 1 credit. Prerequisite: Consent of instructor. An introduction to clinical case management with emphasis on developing clinical skills. Also includes an orientation to the aging as they relate to communication processes and communication disorders. F

282. Survey of Children’s Literature. 3 credits. Prerequisite: Consent of instructor. A course designed to diagnose speech and language pathologies. S

423. Assessment & Program Planning for Special Needs Students. 3 credits. Prerequisite: Consent of instructor. A course designed to be the “Capstone” course for our senior students. Professional competencies, the Code of Ethics, professional issues facing the student embarking upon advanced professional study, and the practicing professional’s scope of practice will be covered. The course will culminate in the administration of a comprehensive assessment of the students’ learning at the undergraduate level. S

431. Introduction to Audiology. 3 credits. Prerequisites: CSD 231 and Math 103 or equivalent. Elementary structure and function of the hearing mechanism; basic psychophysical dimensions of the auditory mechanism; types of deficient hearing; pure tone threshold and screening audiometry. Students are required to do hearing testing to qualify for certification in speech and hearing. F

432. Language, Multiculturalism and Communication Disorders. 3 credits. Prerequisites: CSD 223, 343, 353 and 482. Study of language structure and its interaction with culture from the perspective of the concept of world view, and the application of this relationship to the practice of speech-language pathology. F

433. Language Development. 3 credits. Prerequisite: CSD 343. The nature and development of linguistic content, form, and use from birth to adulthood are studied relative to the development of communication and speech, relative to cognitive, social, and physical development, and relative to cultural diversity. F

434. Language Disorders. 3 credits. Prerequisite: CSD 343. The identification, causes, and remediation of disorders of linguistic content, form, and use are studied relative to cognitive, social and physical development and functioning and relating to cultural diversity. F

435. Aging and Communication Processes. 3 credits. An intensive study of the sociological, psychological, medical and educational aspects of adult development and aging as they relate to communication processes and communication disorders. F

436. Introduction to Practicum. 3 credits. An introduction to clinical case management with emphasis on developing clinical skills. Also includes an orientation to the UND Speech, Language and Hearing Clinic. F

437. Cleft Palate and Other Orofacial Anomalies. 3 credits. Prerequisites: CSD 231 or consent of instructor. Co-req: CSD 333. Communication disorders related to cleft palate and other defects of the speech mechanism. A consideration of etiology, incidence, and clinical management of resulting communication and related problems. S

440. Special Problems in Communication Disorders. 1-3 credits. Prerequisites: Consent of instructor. An examination of special topics in Communication Disorders. On demand.

Computer Science (CSci)

O’Neil (Chair), Grant, Hu, Kim, Liu, Mahalko, Marsh, Reza, Stokke, and Wijgen

The underlying goal of the Department of Computer Science is to provide up-to-date, quality instruction in its undergraduate and graduate programs. In support of this goal, a curriculum has been developed which encourages a formal, abstract, theoretical approach to the study of computer science while providing students with experience on state-of-the-art equipment. A number of computing environments, encompassing personal, mid-range, and mainframe machines, are available to students. The degree programs are designed to provide a background of professional education for careers in business, science, government, and industry, and to furnish a strong foundation for graduate study in computer science.

The department offers a Bachelor of Science in Computer Science through the John D. Odegard School of Aerospace Sciences and a Bachelor of Arts with a Major in Computer Science through the College of Arts and Sciences. A minor in computer science is also available.

The B.S. program provides the strongest mathematical and scientific background. It is recommended for students who intend to pursue graduate studies or to seek employment involving technical or scientific applications of computing. The B.S. degree is accredited by the Computing Accreditation Commission of ABET,
111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: 410-347-7700.

The B.A. program has more flexibility with fewer requirements relating to science and mathematics, but with additional requirements for courses in the humanities. This degree program is recommended for students seeking a broader liberal arts education.

A minor in computer science is available to students who choose to concentrate their studies in an affiliated area. In addition, several courses are offered to provide the necessary basic knowledge of computer technology and computer programming for those students wishing to use the computer as a tool for study and research in other disciplines.

**John D. Odegard School of Aerospace Sciences**

### B.S. IN COMPUTER SCIENCE

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. College of Arts and Sciences Requirements. See College listing.

III. Courses from computer science as follows:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSci 160</td>
<td>Computer Science I</td>
<td>(4)</td>
</tr>
<tr>
<td>CSci 161</td>
<td>Computer Science II</td>
<td>(4)</td>
</tr>
<tr>
<td>CSci 242</td>
<td>Algorithms and Data Structures</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci 250</td>
<td>Assembly Language Programming</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci 259</td>
<td>Social Implications of Computer Technology</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci 351</td>
<td>Introduction to File Processing</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci 365</td>
<td>Organization of Programming Languages</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci 370</td>
<td>Computer Architecture</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci 415</td>
<td>Formal Languages and Automata</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci 451</td>
<td>Operating Systems I</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci Electives*</td>
<td></td>
<td>(12)</td>
</tr>
</tbody>
</table>

* All Computer Science electives must be at or above the 200 level. A combined total of at most 6 credits from CSci 260, 397 or 494 may be applied toward these electives.

IV. Courses from other departments as follows:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Com 110</td>
<td>Fundamentals of Public Speaking</td>
<td>(3)</td>
</tr>
<tr>
<td>EEE 201</td>
<td>Introduction to Digital Electronics</td>
<td>(2)</td>
</tr>
<tr>
<td>EEE 202</td>
<td>Electrical Engineering Laboratory</td>
<td>(1)</td>
</tr>
<tr>
<td>Math 208</td>
<td>Discrete Mathematics</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 165, 166</td>
<td>Calculus I &amp; II</td>
<td>(8)</td>
</tr>
<tr>
<td>approved math elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>approved probability/statistics elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>approved 2-semester laboratory science sequence</td>
<td>(8)</td>
<td></td>
</tr>
</tbody>
</table>

2 approved courses in science or quantitative methods... (6-8)

**College of Arts and Sciences**

### B.A. WITH MAJOR IN COMPUTER SCIENCE

Required 125 hours (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. College of Arts and Sciences Requirements. See College listing.

III. Courses from Computer Science as follows:

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<tbody>
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<tr>
<td>CSci 250</td>
<td>Assembly Language Programming</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci 259</td>
<td>Social Implications of Computer Technology</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci 351</td>
<td>Introduction to File Processing</td>
<td>(3)</td>
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<td>CSci 365</td>
<td>Organization of Programming Languages</td>
<td>(3)</td>
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<td>(3)</td>
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<tr>
<td>CSci 451</td>
<td>Operating Systems I</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci Electives*</td>
<td></td>
<td>(12)</td>
</tr>
</tbody>
</table>

* Electives may be selected from CSci 260 (at most 3 hours), CSci 289, CSci 397 (at most 3 hours) and any other Computer Science courses numbered 300 or above.

IV. Courses from other departments as follows:

Level IV proficiency in a language other than English

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 201</td>
<td>Introduction to Digital Electronics</td>
<td>(2)</td>
</tr>
<tr>
<td>EE 202</td>
<td>Electrical Engineering Laboratory</td>
<td>(1)</td>
</tr>
<tr>
<td>Math 208</td>
<td>Discrete Mathematics</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 365, 166</td>
<td>Calculus I &amp; II</td>
<td>(4)</td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IV. Courses from other departments as follows:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 146</td>
<td>Applied Calculus I</td>
<td>(3-8)</td>
</tr>
<tr>
<td>approved probability/statistics elective</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MINOR IN COMPUTER SCIENCE**

Courses from Computer Science as follows:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSci 160</td>
<td>Computer Science I</td>
<td>(4)</td>
</tr>
<tr>
<td>CSci 161</td>
<td>Computer Science II</td>
<td>(4)</td>
</tr>
<tr>
<td>CSci 250</td>
<td>Assembly Language Programming</td>
<td>(4)</td>
</tr>
<tr>
<td>CSci Electives*</td>
<td></td>
<td>(9)</td>
</tr>
</tbody>
</table>

*All 9 credits hours of Computer Science electives must be 200 level or above, and at least 3 credit hours must be 300 level or above.

**Courses**

101. Introduction to Computers, 3 credits. Recommended corequisite: CSci 101T. An overview of the fundamental concepts and applications of computer science. Topics include data storage, hardware, operating systems, and programming principles. F or S

101T. Software Applications Tutorial, 1 credit. Recommended corequisite: CSci 101. An introductory tutorial course to complement CSci 101. Activities will include hands-on experience with operating systems and application software (including word processors, spreadsheets, and databases). S/U grading only. F or S

120. Computer Programming I, 3 credits. An introduction to computer programming in a high-level language, with emphasis on problem solving and logical thinking. Students learn to design, implement, test, and debug programs for small-scale problems using elementary types and control structures. F or S

160. Computer Science I, 4 credits. An introduction to computer science, with problem-solving, algorithm development, and structured programming using a high-level language. Emphasis on learning how to design, code, debug, and document programs, using techniques of good programming style. Includes laboratory. Students may not take CSci 120 after successfully completing CSci 160. F or S

161. Computer Science II, 4 credits. Prerequisites: CSci 160 and Math 103. Concurrent enrollment in Math 208 is recommended. A broadening of foundations for computer science with advanced concepts in computer programming. Includes an introduction to data structures, analysis of algorithms, and the theory of computation. Includes laboratory. A student may not receive credit for both CSci 161 and CSci 170. F or S

170. Computer Programming II, 3 credits. Prerequisite: CSci 120. Advanced techniques in computer programming using a high-level language. Topics include the use of recursion, pointers, and fundamental data structures in developing small to medium-scale programs. A student may not receive credit for both CSci 170 and CSci 161. Once a year.

242. Algorithms and Data Structures, 3 credits. Prerequisites: CSci 161 and Math 208. Abstract data types (ADTs) and alternatives for implementation of lists, arrays, sets, trees, and graphs. Dynamic and static data structures. Time and space analysis of algorithms for initializing, accessing, searching, sorting, and traversing. F or S

250. Assembly Language Programming, 4 credits. Prerequisite: CSci 160 or knowledge of one high-level language. Computer structure, machine representation of numbers and characters, instruction codes, and assembly systems. Includes laboratory. F or S

260. Advanced Programming Languages, 1-3 credits. Prerequisite: CSci 170 or CSci 161 or consent of instructor. Programming in a specific high-level language for students who are already proficient at programming in another high-level language. Course may be repeated for different languages. A student may not receive credit for both CSci 260 and a 100-level programming course in the same language. On demand.

289. Social Implications of Computer Technology, 1 credit. Prerequisite: CSci 120 or 160. An introduction to the effects of computer technology on society and individuals and to ethical problems faced by computer professionals. Topics covered include privacy, the nature of work, centralization versus decentralization and the need for human factors analysis in the development of a new computer system. S

317. Data Communications, 3 credits. Prerequisites: CSci 250 and Math 208. An introduction to the concepts of data transmission, communication hardware and protocols, communication software and the design, performance and management of computer networks. F

351. Introduction to File Processing, 3 credits. Prerequisite: CSci 242. Techniques of using mass storage devices. Sequential, random and key-accessed files, bit-strings and inverted file structures. S

365. Organization of Programming Languages, 3 credits. Prerequisite: CSci 242 & 250. Compile and run-time requirements of programming languages, parameter passing and value binding techniques. Vector and stack processing. S

370. Computer Architecture, 3 credits. Prerequisite: CSci 250, EE 201, 202. Introduction to hardware methodologies and software extensions to hardware in computers. Some topics on hardware and software selection will be discussed. S

384. Artificial Intelligence, 3 credits. Prerequisite: CSci 242. A survey of the applications and techniques of artificial intelligence. Topics include problem solving paradigms, tree searching, rule-based systems, theorem proving, knowledge representation, natural language processing, image processing, and computer learning. S

397. Cooperative Education, 1-3 credits repeatable to 6. Prerequisite: 15 completed credits in CSci including CSci 242, in addition to standard minimum requirements. CSci 397 cooperative education is not acceptable if student has taken any of the following courses: CSci 399, 499, 494.

F - Fall Semester, S - Spring Semester, F/S - Fall or Spring
Counseling

(Coun)

Juntunen (Chair), Baysden, Daughtry, Houston, Loey (Doctoral Director), Twohey, Wettersten and Whitcomb (Master’s Director)

The Department of Counseling offers graduate programs leading to the degrees of Master of Arts in Counseling and the Doctor of Philosophy in Counseling Psychology. The M.A. with a school counselor emphasis is accredited by the National Council for the Accreditation of Teacher Education (NCATE). The Ph.D. in Counseling Psychology is accredited by the American Psychological Association and prepares graduates for Psychologist licensure in North Dakota, as well as other states. Coursework for the M.A. degree satisfies eligibility requirements for certification as a Counselor, for School Counselor and Rehabilitation Counselor certification, and for Addiction Counselor licensure in North Dakota and other states. The Department is committed to diversity with a particular emphasis on providing graduate training for Native Americans interested in mental health careers.

The masters program provides preparation for counseling practice in community service agencies, universities and colleges, rehabilitation agencies, addiction treatment agencies, or schools, depending upon the emphasis of the student. Admission is based on achievement in undergraduate work, particularly during the junior and senior years, scores on the General Record Exam General Test or the Miller’s Analogies Test, recommendation letters, and relevant experience. Prospective students must have completed at least twenty semester credits of undergraduate coursework in the behavioral sciences (e.g., psychology, sociology) including abnormal psychology, developmental psychology, and statistics. Students are admitted once a year, with completed applications required by February 1 for a summer or fall start date.

Typically, 18-20 students are admitted each year from a pool of 35-55. The masters program requires completion of 48-56 semester credits depending on emphasis (community agency, school, rehabilitation or addition). To complete the program in two academic years, part-time summer enrollment is required, along with full-time fall and spring semester course loads. The program includes a two-semester supervised internship at an external agency.

The doctoral degree program, Counseling Psychology, provides advanced preparation in counseling theory, practice, and research. The program accepts students at the post bachelors and post masters level. Admission is based upon achievement in undergraduate and graduate work (if applicable), scores on the Graduate Record Examinations, recommendation letters, and relevant experience. The program requires four years of full-time study at the post bachelors level or three years at the post masters level, plus a year-long, full-time external internship. Upon completion, graduates are prepared to work as doctoral level counseling psychologists in a variety of settings, such as university counseling centers, mental health agencies, university departments of counseling or psychology, hospitals and private practice. Four to six students are admitted each year. The application deadline is January 10th for admission the following year.

Details of the masters and doctoral degree programs in the Department of Counseling may be found in the graduate section of this catalog or at www.counseling.und.edu. For more information, contact the respective directors, Department of Counseling (701-777-2729).

Criminal Justice Studies

(CJ)

DiCristina, Gottschalk, Hume (Chair), Mayzer, and Meyer

This program is a cooperative venture that pools the resources of the Departments of Anthropology, Philosophy, Political Science, and Sociology with the Criminal Justice Studies Program. The purpose of the program leading to a Bachelor of Science in Criminal Justice Studies in the College of Arts and Sciences is to prepare students for positions as practitioners within criminal justice professions while also offering educational upgrading for individuals already working in criminal justice fields. By incorporating the various disciplines, departments and colleges along with their respective faculty, the program is able to integrate the various approaches and ideals to the study of criminal justice.

Admission Requirements. Students pursuing a major in Criminal Justice Studies must be formally admitted. Students formally admitted, students must have completed 45 total credit hours with a minimum overall grade point average of 2.70, must have
completed CJ 201, CJ 210, Soc 252, and Soc 253 with a minimum grade point average of 2.70 and apply for major status in the College of Arts and Sciences. Following the successful completion of all admission requirements (including GPA requirements), students who have declared Criminal Justice Studies as their major will be notified that they have been accepted into the program. Once admitted, majors will be required to maintain a GPA of 2.70 overall and in the major to graduate with a degree in Criminal Justice Studies. Failure to meet either or both of these requirements will result in the student being placed on probation in the major for one semester. Failure to maintain the requirements for two consecutive semesters will result in dismissal from the Program.

College of Arts and Sciences

B.S. IN CRIMINAL JUSTICE STUDIES

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year university curriculum):

I. General Education Requirements (see University GER listing).

II. The Following Curriculum (42 credits):

- Preadmission Requirements (12 credits):
  - CJ 201. Introduction to Criminal Justice. (3)
  - CJ 210. Introduction to Policing. (3)
  - Soc 252. Criminology. (3)
  - Soc 253. Juvenile Delinquency. (3)

- Required upper division courses (21 credits):
  - CJ 330. Criminological Theory. (3)
  - CJ 353. Law for Criminal Justice System. (3)
  - CJ 401. Administration of Criminal Justice Systems. (3)
  - Soc 323. Sociological Research Methods. (3)
  - Soc 328. Sociological Statistics. (3)
  - Phil 412. Philosophy of Law. (3)
  - Pol 386. American Constitution—Civil Liberties. (3)

A concentration in a single supplementary field other than criminal justice studies is also required of all criminal justice majors. This concentration may be met in three ways: (1) a language proficiency of level IV in a modern foreign language; (2) completion of the four-course sequence in American Sign Language; or (3) 20 credit hours (at least nine of which must be numbered 300 or above) in any single subject matter taught at this University.

MINOR IN CRIMINAL JUSTICE STUDIES

21 credits required:

- CJ 201. Introduction to Criminal Justice. (3)
- CJ 210. Introduction to Policing. (3)
- Soc 252. Criminology. (3)
- Soc 253. Juvenile Delinquency. (3)

9 additional credits from:

- Anth 345. Forensic Science. (3)
- Anth 346. Analysis of Forensic Evidence. (3)
- CJ 302. Women, Crime, and Criminal Justice. (3)
- CJ 350. Correctional Alternatives. (3)
- CJ 351. Police Administration. (3)
- CJ 352. Criminal Investigation. (3)
- CJ 361. Vicemology. (3)
- CJ 452. Police Role in Society. (3)

Courses

201. Introduction to Criminal Justice. 3 credits. An undergraduate study and overview of the criminal justice system emphasizing the "system," its legal actors and its political constraints. Designed for the beginning student in law enforcement, criminology, corrections, sociology, social welfare, government and pre-law. F

210. Introduction to Policing. 3 credits. Prerequisite: CJ 201. Introduces the student to the specific field of law enforcement. Provides an overview of federal, state, and local law enforcement agencies. Reviews the coordination requirements of the system. S

262. Women, Crime, and Criminal Justice. 3 credits. Prerequisite: CJ majors and minors only. This class will explore the changing roles of women as offenders, as victims, and as professionals in the criminal justice system. Attention will be directed toward empirical findings, conflict theory insights, and the feminist perspective within the discipline. The basic goal of this course is to respectfully enhance understanding of the importance of gender equality within the field of criminal justice and to encourage self-examination of habitual models of thinking and acting. S

330. Criminological Theory. 3 credits. Prerequisite: CJ majors and minors only. This class will provide an overview of a variety of criminological theories. Attention will be directed toward the study of the major theories, the problems which have influenced the discipline, the basic goal of this course is to respectfully enhance understanding of the importance of gender equality within the field of criminal justice and to encourage self-examination of habitual models of thinking and acting. S

350. Correctional Alternatives. 3 credits. Prerequisites: Restricted to CJ majors and minors only. This class will explore the changing roles of women as offenders, as victims, and as professionals in the criminal justice system. Attention will be directed toward current trends concerning the victim in the American criminal justice system, with particular emphasis on measuring victimization, fear of crime, the impact of victimization on the individual, and victims rights and compensation initiatives. The basic goal of this course is to help the student develop an understanding of the impact of victimization on the individual, those associated with the victim, the criminal justice system, and each of us as individuals. S

397. Cooperative Education, 1.8 credits, repeatable to 16. Prerequisite: CJ 494 (1 cr.) and CJ majors and minors only. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement among student, department, and employer. Any student registering for CJ 397 will not be eligible to register in CJ 497, Administrative Internship. S/U grading only. F,SS

399. Problems in Criminal Justice. 1-3 credits. Maximum of 6 credits. Prerequisite: CJ majors and minors only, consent of instructor. Students study special topics under the direction and supervision of a member of the staff, prior consent of instructor is required before enrollment. F

401. Administration of Criminal Justice Systems. 3 credits. Prerequisites: Senior standing. Restricted to CJ majors. This course addresses issues of the nature of organizations, the individual in the organization, group behavior in organizations, processes in organizations, and organizational change as applied to the administration of criminal justice. F

452. The Police Role in Society. 3 credits. CJ majors and minors only. The functions and role of police in society with a focus on contemporary issues in police organization and administration. S

494. Readings in Criminal Justice. 1-6 credits. Prerequisite: CJ majors and minors only, consent of instructor. Selected readings with oral and written reports. F

497. Administrative Internship. 2-12 credits. Prerequisite: CJ 494 (1 credit). Prerequisite: CJ majors and minors only, consent of instructor. Prior approval of instructor required before enrollment. S/U grading only. On-the-job training in a criminal justice position with final report and analysis of the agency by the intern. F,SS
Cytotechnology

T. Weiland, M.D. (Medical Director)
K. Hamm, SCT (Program Director)
K. Droog, CT (Education Coordinator)

Cytotechnology is a high level medical laboratory specialty centered on the subject of diagnostic cytology, a field practiced by both pathologists and technologists. It specializes in the detection and diagnosis of abnormal human body cells, especially for the diagnosis of cancerous, or pre-cancerous conditions. A cytotechnologist’s work consists primarily of screening cell samples using a microscope searching for abnormal cells. Once found, marked, and interpreted by the technologist, these cells are reviewed by a pathologist. Cytotechnologists are also trained to be proficient in specimen preparation and laboratory quality assurance methods. Diagnostic cytology practice is documented at UND back to 1952. The Department of Pathology has offered an accredited course in cytotechnology since 1967. In 1975 it was upgraded from a non-credit, certificate course to a four-year, degree granting program, and in 1988 expanded from four to a six-student program. Most recently awarded reaccreditation in 1998, this program currently exists as the only such program in North Dakota. Among the affiliated Western Undergraduate Exchange states (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington, and Wyoming), the only other training offered in this specialty is in California and Utah.

The UNDMSHS Cytotechnology Program (Path 401, Path 402, & Path 403) is a 12-month professional course. It is designed to be taken as either a 5th year, following a baccalaureate in another major, or as the 4th year of a major in Cytotechnology. Enrollment is limited to 6 students per year. University commencement and program graduation both occur at the end of summer session. Students are selected using criteria of academic performance, references, an interview with program officials, and a background in life sciences. Upon completion of the program, graduates are eligible to take the national certifying examination administered by the Board of Registry of the American Society of Clinical Pathologists.

Applications for admission to the Cytotechnology Program should be submitted to the Program Director. To be eligible for enrollment, applicants must meet the following requirements:
(1) They must receive departmental approval.
(2) They must have completed all other required courses.
(3) Upon successful completion of the program (Path 401, 402, 403), they must be eligible to be awarded a bachelor’s degree (or already possess a degree). For those students who already possess an associate’s degree, transcripts must indicate a minimum of 20 semester hours of biological science and 8 of chemistry.

School of Medicine and Health Sciences

B.S. IN CYTOTECHNOLOGY

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. The Following Curriculum:

Anat 204 & 204L, Anatomy for Paramedical Personnel and Laboratory .......................................... (3-5)
Biol 150/150L, General Biology I & II and Laboratories .................................................. (8)
Biol 369, Histology ........................................................................................................ (4)
12 hours from:
Biol 341, Cell Biology .................................................................................................. (4)
Biol 357, Genetics ........................................................................................................ (3)
Biol 364, Parasitology .................................................................................................. (4)

Biol 379, Vertebrate Zoology ......................................................................................... (2)
Biol 371, Anatomy and Adapations Laboratory ......................................................... (2)
Biol 408, Anatomy ........................................................................................................ (4)
CLS 234, 234L, Human Parasitology ........................................................................... (3)
CLS 325, 325L, Hematology & Laboratory ............................................................... (5)

4 hours from:
MBio 202 + 202 L, Introduction to Medical Microbiology and Laboratory ............... (5)
MBio 302 + 302 L, General Microbiology and Laboratory ........................................ (4)

4 hours from:
Biol 442, Physiology of Organs and Systems ............................................................... (4)

8 hours from:
Chem 121, 121L, General Chemistry I and Laboratory .............................................. (4)
Chem 122, 122L, General Chemistry II and Laboratory ............................................. (4)
Chem 116, Introduction to Organic & Biochemistry ..................................................... (4)
Chem 240, 240L, Survey of Organic Chemistry and Laboratory ............................. (4)
BBM 301, Biochemistry Lecture .................................................................................. (3)

* Math 103 or an appropriate score on the Placement Testing Program (PTP) is a required prerequisite.
** Students who elect to take BBM 301 should NOT take Chem 116, but must take Chem 122 and 240.

2 hours from:
CLS 490, Financial & Quality Management of the Clinical Laboratory .................... (2)

Mgmt 305, Managerial Concepts .............................................................................. (3)

3 hours from:
CSci 101, Introduction to Computers ........................................................................ (3)
CSci 120, Computer Programming I ........................................................................... (3)
CSci 170, Computer Programming II ........................................................................... (3)
Phys 211/211L, College Physics I and Laboratory ..................................................... (4)
Phys 212/212L, College Physics II and Laboratory .................................................... (4)

III. Cytotechnology Program, professional phase: (Senior year, 12 months)

Path 401........................................ Diagnostic Cytology I ........................................ (15)
Path 402........................................ Diagnostic Cytology II ...................................... (15)
Path 403........................................ Diagnostic Cytology III ..................................... (10)

The Cytotechnology Program is part of the Pathology (Path) department. The pathology courses for cytotechnology majors are listed below:

401. Diagnostic Cytology I, 15 credits. Full day, integrated lecture, tutorial, laboratory course introduces exfoliative cytology of the female genital tract. The student learns principles and microscopic skills involved in screening/diagnosing pap test samples in the medical laboratory. Prerequisites: 20 hours biologic sciences, 8 hours chemistry, 3 hours math, including Biology 101, 102, and 369. Anatomy 204 and departmental approval F.

402. Diagnostic Cytology II, 15 credits. Full day, integrated lecture, tutorial, laboratory course introduces cytopathology of major body organs. The student learns principles and microscopic skills involved in preparing/diagnosing body fluid and fine needle aspiration samples in the medical laboratory. Prerequisites: Path 401 and departmental approval S.

403. Diagnostic Cytology III, 10 credits. Full day, 12 week clinical practicum held at UND or at a clinical affiliate cytology laboratory. Course is centered on the reinforcement of principles and the practical skills learned in Path 401 and Path 402. Prerequisite: Pathology 402 and Departmental approval SS.

Bible 371, Anatomy and Adapations Laboratory ......................................................... (2)

Economics

(Econ)

P. O’Neill (Chair), Bagheri, Biederman, Blackwell, Flynn, Goenner, Hagen, Owens, Ramsett, and Snaith

Economics is the study of how scarce resources are mobilized to meet the economic goals of individuals, businesses, organizations, governments and societies. The study of Economics is typically divided into two parts: macroeconomics (or aggregate economic analysis) studies economics from a broad-based perspective, including problems and issues such as unemployment, inflation and economic growth; microeconomics studies economics in terms of individual components, including problems and issues such as product pricing,
competition, regulation and international trade. Students of Economics can expect to become familiar with key economic concepts and laws which give them an analytical perspective that is unique to this discipline, but is of great importance to individuals and to society.

The mission of the Economics Faculty falls into several important and interdependent areas. The faculty offers a curriculum that reflects the current state of knowledge and skills used by professional economists and that fosters an understanding of the workings of modern economies, whether at regional, national or international levels. The Economics Faculty carries out research objectives, consistent with those reported by the University and the College of Business and Public Administration, by completing research leading to publication in professional journals and other research outlets; and, as needed, by providing service-related and contracted research to the city, region and state. The Economics Faculty provides services to the college, university, community, region, the state and professional organizations. This includes: committee service, provision of appropriate expertise in matters relevant to the economics profession; memberships in civic organizations; memberships in professional organizations as well as other relevant service related activities.

All programs in Economics include the necessary undergraduate economics courses for students who intend to pursue graduate level study. In addition, the major in Business Economics and the major in Economics offer a quantitative track which is recommended for students preparing for graduate study in Economics or Actuarial Science.

College of Business and Public Administration

B.B.A. WITH MAJOR IN BANKING AND FINANCIAL ECONOMICS

The Economics Faculty together with other faculty in the College of Business and Public Administration offer a major in Banking and Financial Economics that is intended to prepare students for employment with financial institutions and government. The major is comprised of a comprehensive curriculum that provides a background in basic business, economic theory, the principles and practices of banks and other financial institutions, bank regulation, macroeconomic policy and international finance. Experience has shown the graduates of this program are prepared to immediately function in highly responsible positions in financial institutions and regulatory agencies.

All B.B.A. candidates must fulfill the College of Business and Public Administration degree requirements.

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing; 39 credit hours).

The following are required by CoBPA (12 credit hours)

- Comm 110 - Fundamentals of Public Speaking (3)
- Econ 146 - Finite Mathematics (3)
- HIST 215 - American Government I (3)
- MATH 165 - Calculus I, may be substituted for MATH 146.
- PSY 111 - Introduction to Psychology (3)
- SOC 110 - Introduction to Sociology (3)

II. College of Business and Public Administration Core Requirements (40 credit hours)

- Acc 201 - Principles of Accounting II (3)
- Acc 315 - Business in the Legal Environment (3)
- Econ 201* - Principles of Microeconomics (3)
- Econ 210** - Introduction to Business and Economic Statistics (3)
- Econ 303 - Money and Banking (3)
- ISys 217 - Fundamentals of Management Information Systems (4)
- Fin 330 - Principles of Finance (3)
- Mgmt 301 - Strategic Management (3)
- Mgmt 305 - Marketing Foundations (3)

* This course satisfies part of the GER Social Sciences requirement.

** This course satisfies part of the GER Math, Science, and Technology requirement.

III. Required Major Courses (25 credit hours):

- Acc 301* - Intermediate Accounting I (4)
- Econ 306 - Intermediate Microeconomic Theory (3)
- Econ 309 - Intermediate Macroeconomic Theory and Policy (3)
- Econ 405 - Bank Regulation (3)
- Econ 438 - International Money and Finance (3)
- Fin 340 - Intermediate Financial Management (3)
- Fin 350 - Financial Information Systems (3)

*Banking and Financial Economics majors are exempt from the Accnt 218 prerequisite.

IV. Elective Major Courses: Choose at least 9 credit hours from the following:

- Accnt 302 - Intermediate Accounting II (3)
- Econ 338 - International Economics (3)
- Econ 355 - Government Regulation of Business (3)
- Econ 395** - Special Topics in Economics (1-3)
- Econ 397* - Cooperative Education (1-4)
- Econ 409 - Current Issues in Macroeconomic Policy (3)
- Econ 410 - Empirical Methods in Economics I (3)
- Econ 411 - Empirical Methods in Economics II (3)
- Econ 414 - Managerial Economics (3)
- Econ 416 - Mathematics for Economists (3)
- Econ 497* - Internship (1-4)
- Fin 321 - Real Estate Finance and Investment (3)
- Fin 324 - Real Estate Appraisal (3)
- Fin 360 - Capital Market Financing and Investment Strategies (3)
- Fin 420 - Investment Analysis and Portfolio Management (3)
- Fin 460 - Management of Financial Institutions (3)
- Fin 491** - Senior Topics in Finance (1-3)

* No more than 4 hours of electives from Econ 397 and 497 may count toward the elective major courses.

** Approval of the department required.

B.B.A. WITH MAJOR IN BUSINESS ECONOMICS

The major in Business Economics is offered through the College of Business and Public Administration. This program emphasizes the business firm — integrating economics with related areas in marketing, management, accounting, finance, and quantitative analysis. Students who complete a major in Business Economics possess a comprehensive background in the basic foundations of a business as well as the analytical skills in economics increasingly required to be successful in the business world at local, regional, national and international levels.

All B.B.A. candidates must fulfill the College of Business and Public Administration degree requirements.

Required 125 credit hours (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing; 39 credit hours).

The following are required by CoBPA (12 credit hours)

- Comm 110 - Fundamentals of Public Speaking (3)
- Econ 146 - Finite Mathematics (3)
- MATH 146* - Applied Calculus I (3)
- MATH 104 - Finite Mathematics (3)
- Accnt 218* - Principles of Accounting II (3)
- Accnt 301* - Intermediate Accounting I (4)
- Accnt 302 - Intermediate Accounting II (3)
- Econ 306 - Intermediate Microeconomic Theory (3)
- Econ 309 - Intermediate Macroeconomic Theory and Policy (3)
- Econ 405 - Bank Regulation (3)
- Econ 438 - International Money and Finance (3)
- Fin 340 - Intermediate Financial Management (3)
- Fin 350 - Financial Information Systems (3)

* This course satisfies part of the GER Social Sciences requirement.

** This course satisfies part of the GER Math, Science, and Technology requirement.

III. Required Major Courses (25 credit hours):

- Accnt 301* - Intermediate Accounting I (4)
- Econ 306 - Intermediate Microeconomic Theory (3)
- Econ 309 - Intermediate Macroeconomic Theory and Policy (3)
- Econ 405 - Bank Regulation (3)
- Econ 438 - International Money and Finance (3)
- Fin 340 - Intermediate Financial Management (3)
- Fin 350 - Financial Information Systems (3)

*Banking and Financial Economics majors are exempt from the Accnt 218 prerequisite.

IV. Elective Major Courses: Choose at least 9 credit hours from the following:

- Accnt 302 - Intermediate Accounting II (3)
- Econ 338 - International Economics (3)
- Econ 355 - Government Regulation of Business (3)
- Econ 395** - Special Topics in Economics (1-3)
- Econ 397* - Cooperative Education (1-4)
- Econ 409 - Current Issues in Macroeconomic Policy (3)
- Econ 410 - Empirical Methods in Economics I (3)
- Econ 411 - Empirical Methods in Economics II (3)
- Econ 414 - Managerial Economics (3)
- Econ 416 - Mathematics for Economists (3)
- Econ 497* - Internship (1-4)
- Fin 321 - Real Estate Finance and Investment (3)
- Fin 324 - Real Estate Appraisal (3)
- Fin 360 - Capital Market Financing and Investment Strategies (3)
- Fin 420 - Investment Analysis and Portfolio Management (3)
- Fin 460 - Management of Financial Institutions (3)
- Fin 491** - Senior Topics in Finance (1-3)

* No more than 4 hours of electives from Econ 397 and 497 may count toward the elective major courses.

** Approval of the department required.
Econ 201*...........Principles of Microeconomics ...........................................(3)
Econ 202*...........Principles of Macroeconomics ...........................................(3)
Econ 210**...........Intro to Business and Economic Statistics ...........................(3)
Econ 303...........Money and Banking ..............................................................(3)
Econ 307...........Advanced Microeconomic Theory .........................................(3)
Econ 310...........Intermediate Microeconomic Theory ......................................(3)
Econ 312...........Macroeconomic Theory ..........................................................(3)
Econ 315...........Intermediate Macroeconomic Theory & Policy .......................(3)
Econ 338...........International Economics .........................................................(3)
Econ 400...........Empirical Methods in Economics I ........................................(3)

* This course satisfies part of the GER Social Sciences requirement.
** This course satisfies part of the GER Math, Science, and Technology requirement.

III. Required Major Courses (15 credit hours):
Econ 308...........Intermediate Microeconomic Theory .......................................(3)
Econ 309...........Advanced Macroeconomic Theory & Policy ...........................(3)
Econ 338...........International Economics .........................................................(3)
Econ 410...........Empirical Methods in Economics II .........................................(3)
Econ 412...........Managerial Economics ............................................................(3)

IV. Elective Major Courses: Choose from either Option A, Option B, or a 12 credit hour combination from Options A and B below:
Option A - Choose at least 12 credit hours from the following:
Econ 305...........Principles of Banking ...............................................................(3)
Econ 324...........Public Finance .........................................................................(3)
Econ 330...........Business and Economic History ..............................................(3)
Econ 341...........Labor Economics and Labor Relations .................................(3)
Econ 355...........Government Regulation of Business .......................................(3)
Econ 380...........Global Economic Development .............................................(3)
Econ 395...........Special Topics in Economics ...................................................(1-3)
Econ 397*...........Cooperative Education ..........................................................(1-4)
Econ 405...........Bank Regulation .....................................................................(3)
Econ 406...........Bank Regulation .....................................................................(3)
Econ 409...........Current Issues in Macroeconomic Policy ................................(3)
Econ 411...........Empirical Methods in Economics II .........................................(3)
Econ 416...........Mathematics for Economists ....................................................(3)
Econ 438...........International Money and Finance ...........................................(3)
Econ 498...........Senior Honors Thesis ...............................................................(1-18)
Econ 499*...........Readings in Economics ..........................................................(1-3)
Econ 499*...........Research in Economics ..........................................................(1-3)
Econ 499*...........Internship ..............................................................................(1-4)
Econ 575...........Adv. ST. Health Economics ......................................................(3)

* No more than 6 credit hours of electives from Econ 397, 495, 496, and 497 may count toward the elective major courses.

Option B (Quantitative Option) - Choose 12 credit hours from the following:
Econ 411...........Empirical Methods in Economics II .........................................(3)
Econ 416...........Mathematics for Economists ....................................................(3)
Math 165...........Calculus I ..............................................................................(4)
Math 166...........Calculus II .............................................................................(4)
Math 265...........Calculus III ............................................................................(4)
Math 263...........Elementary Differential Equations ..........................................(3)
Math 272...........Applied Linear Algebra ............................................................(3)
Math 465...........Operations Research .................................................................(3)

* Students seeking to prepare for graduate school in Economics are advised to choose Option B.

B.A. WITH MAJOR IN ECONOMICS

The major in Economics provides a critical examination of how the economic system works in the United States and throughout the world. The introductory courses are surveys of economic problems, policies, and theory; the required courses in micro theory and macro theory give a deeper analytical foundation. Elective permits further study in a wide range of fields, including international trade and finance, public sector economics, economic development, economic history, capital theory and finance, labor economics, income distribution, political economy, financial markets, and public policy analysis. The major in Economics provides a general background that is useful to those planning careers in law, government service, or business, as well as those planning careers as professional economists. Professional economists work as college professors, as researchers for government agencies, in businesses and consulting firms, and as administrators and managers in a wide range of fields.

Required courses (20 credit hours):
Econ 201*...........Principles of Microeconomics ...........................................(3)
Econ 202*...........Principles of Macroeconomics .............................................(3)
Econ 303...........Money and Banking ...............................................................(3)
Econ 308...........Intermediate Microeconomic Theory ......................................(3)
Econ 309...........Intermediate Macroeconomic Theory & Policy .......................(3)

Economics Electives .......................................................................................(5)

MINOR IN ECONOMICS

Students who are interested in obtaining a basic background in Economics to complement their chosen major course of study may elect a minor in Economics offered through the College of Arts and Sciences.

Required courses (20 credit hours):
Econ 201*...........Principles of Microeconomics ...........................................(3)
Econ 202*...........Principles of Macroeconomics .............................................(3)
Econ 303...........Money and Banking ...............................................................(3)
Econ 308...........Intermediate Microeconomic Theory ......................................(3)
Econ 309...........Intermediate Macroeconomic Theory & Policy .......................(3)

Economics Electives .......................................................................................(5)

Courses

105. Elements of Economics, 3 credits. Survey of Economic principles for stu-
dents planning no further formal study of Economics. Analysis of factors influencing aggregate levels of output, employment, and prices, introduction to U.S. monetary sys-
tem; price determination and resource allocation under competitive and monopolistic conditions. Review of selected contemporary economic issues. (No credit if Economics 201-202. Principles of Microeconomics and Macroeconomics, have been completed or audited. Not available to students in the College of Business and Public Administra-
tion.) P.S.

111. Principles of Microeconomics, 3 credits. Open to freshmen. Pre-
or corequisite: Math 103 or 104 or equivalent. Nature, method, and scope of Economic Analysis: economic scarcity, resources, specialization and division of labor, supply and demand, production and cost, technology, product and resource market structures, dist-
bution of income, and international trade. P.S.

202. Principles of Macroeconomics, 3 credits. Prerequisite: Econ 201. Nature, method, and scope of economic analysis: aggregate levels of income and employment,
inflation, monetary and fiscal policy, the role of the U.S. economy as part of a world economic system.

206. Survey of Economic Principles: Micro-Macro. 4 credits. Prerequisite: consent of instructor. Accelerated course in economic principles intended for students pursuing the MBA graduate degree. This course considers both micro and macro topics. Micro topics include: Economics and Economic Reasoning, The Economic Organization of Society, Supply-Demand Analysis; Elasticity, Individual Choice; Production and Cost Analysis; and Market Structures. Macro topics include: National Income Accounting, Economic Growth, Business Cycles and Inflation; Fiscal Policy; Monetary Policy; The Great Depression and the World Economy. On Demand.

210. Introduction to Business and Economic Statistics. 3 credits. Prerequisite: Math 103 or 104, or equivalent. Descriptive statistics; probability distributions; sampling distributions; statistical inference for means and proportions; hypothesis testing; simple regression and correlation; non-parametric statistics. F,S

324. Mathematics and Statistics for MBA Students. 3 credits. Prerequisite: Approval of MBA director. To provide knowledge in mathematics and statistics needed for students in the MBA program. Topics include, among others, linear and quadratic functions, logarithmic and exponential functions, matrix algebra, limits, derivatives, linear and nonlinear programming, descriptive statistics, data collection, sampling, probability, statistical inference, and linear regression. SS

300. Money and Banking. 3 credits. Prerequisite: Econ 201 and 202. Nature of our current Monetary System; functional analysis of commercial bank operations; limits to credit expansion; alternative theories of the value of money; monetary and fiscal policies for control of the business cycle; powers of the Federal Reserve System and the Treasury, mechanics of international payment; balance-of-payments and other problems. F,S

305. Principles of Banking. 3 credits. Prerequisite: Econ 303. This course introduces the students to basic principles of banking governing loans, investments, deposits, liabilities, and capital. Consideration is given to the areas of liquidity, profitability, and capital adequacy as they relate to regulatory standards. Additional topics include: bank organization, performance, and scope of services. F,S

308. Intermediate Microeconomic Theory. 3 credits. Prerequisite: Econ 201 and 202. Theory of demand, production, and cost; price determination under alternative market structures; general equilibrium and economic welfare; analysis of market failure; applications to public policy. Core requirement for students planning advanced study in Economics. F,S

309. Intermediate Macroeconomic Theory and Policy. 3 credits. Prerequisite: Econ 201 and 202. A framework for studying national income, employment, and the general price level is developed. Theoretical perspectives on the National Income and Product accounts, expenditures in the public and private sectors of the economy, and supply and demand for money, labor, and other resources are surveyed. Macroeconomic Theory is then applied to a study of monetary, fiscal, incomes, and other policies intended to influence unemployment, inflation, balance of international financial payments, and economic growth. Core requirement for students planning advanced study in Economics. S

320. Public Finance. 3 credits. Prerequisite: Econ 201 and 202. Growth and effects of the public sector of the economy emphasizing effects of taxation and spending on borrowing and debt management on efficiency and use of economic resources. S

330. Business and Economic History. 3 credits. Prerequisites: Econ 105 or 202. An analysis of the growth and development of the American economy since its colonial origins. The framework of economic analysis applied to the patterns and trends. Specific topics include industrialization, capital accumulations, financial innovation, technological change, banking, the Great Depression and effects of entrepreneurial and government decisions. F

331. International Economics. 3 credits. Prerequisite: Econ 201 and 202. Economic basis for gain in international trade; capital and population movements; international disequilibrium and the process of balance-of-payments adjustments; tariffs, underdeveloped countries. F,S

341. Labor Economics and Labor Relations. 3 credits. Prerequisites: Econ 201 and 202. A survey of the nature and causes of the economic problems of the American wage and salary earner and of the attempts of wage earners and society, through organizations and legislation, to alleviate these problems. The course comparatively surveys the history and systematic theories of labor movements and the labor movement's influences on wages and employment. Particular emphasis will be placed on the law of industrial relations, employment and income access, and the adjustment of labor disputes. F

355. Government Regulation of Business. 3 credits. Prerequisite: Econ 201 and 202. An exploration of how government regulations regulate business activity. Government regulation falls into three broad areas: economic regulations; social regulations; anti-trust. The historical development of regulation from both a legal and economic perspective, will be discussed. Particular attention will be paid to the current trend toward deregulation of previously regulated industries such as airlining, telecommunications, and trucking. F

380. Global Economic Development. 3 credits. Prerequisites: Econ 201 and 202. This course focuses on economic development issues at the global level. It covers both developing countries in the conventional sense and economies in transition from socialism to a market economy. In this context development is broadly defined as the transition from one state to another. Selected topics common among these countries (such as determinants of growth, modernization, technology, price liberalization, privatization, macro stabilization, trade policies, legal structure, organized crime, inequality, poverty, human capital, and global sustainability) are discussed to better understand the forces that shape the wealth and well being of nations and people in the world around us. On demand.

395. Special Topics in Economics. 1-3 credits. Prerequisite: Econ 201 and Econ 202. Special topic will vary from year to year; some years an important development in economic theory, other years, a significant issue in economic policy. On demand.

397. Cooperative Education. 1-4 credits. Repeatable to 6 credits. Prerequisite: Permission of departmental Cooperative Education Coordinator to enroll. A practical work experience with an employer closely associated with the student’s academic area. S/U grading only. F,S

400. History of Economic Thought. 3 credits. Prerequisites: Econ 105 and Econ 201 and 202. Broad overview of the major schools of thought including Mercantilist, Physiocrat, Classical, Marxian, Socialist, Historical, Austrian, Neoclassical, Institutional, Keynesian, and Monetarist. The coverage includes utility theory, income/expenditure theory, growth/description theory, scientific method, scope and public policy. S

405. Bank Regulation. 3 credits. Prerequisite: Econ 303. The regulations impose upon the banking industry are examined at several levels: state, federal, and global. Both the historical development of banking regulation as well as current issues/controversies are discussed. In addition, the banker’s perspective of regulatory compliance is explored. S

409. Current Issues in Macroeconomic Policy. 3 credits. Prerequisite: Econ 303. This course focuses on the conduct of macroeconomic policy, especially as it pertains to the operations and functions of the nation’s financial system. The two basic tools of macroeconomic policy—monetary policy and fiscal policy—are studied from historical, contemporary, and theoretical perspectives. Emphasis is placed on recent developments in the theory and practice of macroeconomic policy, special emphasis is placed on the role of monetary policy as it affects the operations of financial markets and financial institutions. S

410. Empirical Methods in Economics I. 3 credits. Prerequisites: Econ 201, 202, and 210. This course is an introduction to econometrics; the joint area of economics and statistics dealing with the application of statistical techniques to economic problems. The course objectives are to acquire a basic understanding of the theory and methods of econometrics and to gain practical experience in utilizing these methods. The student will use the tools developed in the course in homework and written assignments so that they can develop an insight to theory and its applications. F

411. Empirical Methods in Economics II. 3 credits. Prerequisite: Econ 410. A continuation of Econ 410, but with a major emphasis on business and economic forecasting. As with Econ 410, there is a heavy emphasis on solving practical problems of the major types common in the Economics profession. S

414. Managerial Economics. 3 credits. Prerequisites: Econ 210, 308, Math 146 or equivalent, Elys 217 or equivalent. A synthesis relating economic theory, statistics, and mathematics to pricing, output, and resource allocation decisions by business firms. S

416. Mathematics for Economists. 3 credits. Prerequisite: Econ 308 and 309; Math 146 or 165. Study of mathematical methods in the areas of introductory calculus and linear algebra, and their application to economic analysis. Mathematical analysis of static and dynamic equilibrium models, growth models, distribution, production functions, cycles, activity analysis, mathematical programming, and model building. On demand.

418. Economic Education. 3 credits. Prerequisite: Econ 105 or equivalent. Designed for students planning to teach secondary social studies. Curriculum materials and methods of teaching economics; techniques for integrating economics into social studies curriculum. On demand.

438. International Money and Finance. 3 credits. Prerequisite: Econ 303. Identification of key international financial concepts, and analysis of their relationships in the international money and capital markets; determination of the balance of payments and exchange rates; and examination of alternative organizations of the international monetary system. F

496. Research in Economics. 1-3 credits. Prerequisite: Permission of instructor. A practical work experience with an employer closely associated with the student’s academic area. S/U grading only. F,S,SS

497. Internship. 1-4 credits. Prerequisite: Permission of Department Coordinator. An internship is designed to provide the student with an opportunity for participating in a supervised work experience directly related to the field of training. Student will work closely with faculty adviser in planning the internship with an approved cooperating institution. S/U grading only. F,S,SS

498. Research in Economics. 1-3 credits. Research work and use of original documents; collecting of material and preparing of special topics and bibliographies; familiarizing the student with government publications and other material available for study of economic problems. F,S,SS


495. Readings in Economics. 1-3 credits. Extensive reading in the student’s field of specialization; conference arranged with the instructor; written reports to be submitted. F,S,SS

496. Research in Economics. 1-3 credits. Research work and use of original documents; collecting of material and preparing of special topics and bibliographies; familiarizing the student with government publications and other material available for study of economic problems. F,S,SS

497. Internship. 1-4 credits. Prerequisite: Permission of Department Coordinator. An internship is designed to provide the student with an opportunity for participating in a supervised work experience directly related to the field of training. Student will work closely with faculty adviser in planning the internship with an approved cooperating institution. S/U grading only. F,S,SS
Education and Human Development
(EHD)

200. Research in the University Library. 1 credit. Introduction to effective library-based research. Current technologies and traditional methods are emphasized. F.S

250A. Special Topics. (regular grading). 250B. Special Topics (SU grading). 1-3 credits in any one semester; repeatable to 12 credits. Specially arranged seminars or courses on contemporary topics not covered by regular departmental offerings. May be initiated by students with approval of dean and departments involved, provided appropriate faculty members are willing. F.S

390A. Special Topics (regular grading). 390B. Special Topics (SU grading). 2 credits. May be repeated.

495A. Special Problems (regular grading). 495 B. Special Problems (SU grading) 1-3 credits in any one semester; repeatable to 12 credits. Specially arranged seminars or courses on contemporary topics, having professional orientation and possible prerequisites not covered by regular departmental offerings. May be initiated by the students with approval of dean and department involved, provided appropriate faculty are willing. F.S

497. Community Concepts of Residence Hall Living. 2 credits. Assists Residents Assistants in gaining a more complete understanding of components of a successful residence hall environment with implications for job satisfaction and individual development. F.S

Electrical Engineering
(EE)

Johnson (Chair), Faruque, Heckmann, Miles, Salehfar, Schultz, and Won

The mission of the department is to provide students with a strong foundation in the traditional and contemporary areas of electrical engineering. The objective of the undergraduate program is to educate students in science and engineering so that they can identify and solve technological problems in society. Social and humanistic issues are also emphasized in the general education component of the program to provide breadth in education. The program provides graduates with the knowledge, aptitudes, and attitudes which prepare them for corporate and government entry-level positions or to pursue further education at the graduate level.

The department has the following educational objectives:

1. Provide students with a strong foundation in the traditional and contemporary areas of electrical engineering.
2. Educate students in science and engineering so that they can identify, understand, and solve technological problems in society.
3. Provide students with the knowledge and opportunity which prepare them for practice or to pursue further education at the graduate level.
4. Provide students with breadth of knowledge in social and humanistic issues.
5. Maintain a nationally competitive electrical engineering program.

The department is committed to fostering a close student-faculty educational environment which facilitates self-development, self-confidence, and competence. This commitment extends to providing an excellent undergraduate electrical engineering program that encompasses both breadth and depth. The technical and liberal arts components of the curriculum provide the students with the opportunity for self-development, technical competence, and awareness of economic and ethical responsibilities. The technical curriculum includes (1) basic engineering science; (2) traditional electrical engineering areas, such as circuits, analog/digital electronics, electric energy conversion, control systems, computer-aided design, and electromagnetic fields; and (3) electives, by which junior and senior-level students may select courses with a focus on a particular subject, or related subjects, in electrical engineering. These areas of concentration include systems engineering, power systems planning and distribution, signal processing, controls and robotics, digital design, and applied electromagnetics.

To prepare students for engineering practice, design and hands-on experience are emphasized throughout the curriculum and supported by diverse laboratory facilities to implement design ideas. Students are introduced to subject related design tools in several required and elective courses in preparation for a major senior design experience. Every student is required to complete a comprehensive design project. Computer applications, statistical methods, and written/oral/interpersonal communication skills are also emphasized in the curriculum. Cooperative education is encouraged as a vehicle for enhancing students’ communication and interpersonal skills, in addition to establishing an awareness of industrial practices and technical development. Opportunities to enhance teamwork, written and oral communication, and self-learning skills are available across the curriculum. Students are encouraged to promote the profession and develop leadership skills through involvement in honorary and professional societies, as well as participation in laboratory and design project activities.

The department has a strong student advising program, which facilitates individual contact with students to help them make sound academic decisions and to understand the purpose of their education and the profession. Through this program, students and faculty establish personal relationships and enthusiasm toward engineering education.

To allow qualified students to complete a graduate degree in one year, beyond that required to receive the baccalaureate degree alone, the department offers combined Bachelor of Science in Electrical Engineering (BSEE)/Master of Science (with a major in Electrical Engineering) and BSEE/Master of Engineering degrees.

See Combined Degree Program under the School of Engineering and Mines for additional details.

In addition to the traditional broad electrical engineering program, the department makes two focus areas available to students with interest in Aerospace or Computer Science. All three programs are listed in their entirety as follows:

School of Engineering and Mines

B.S. IN ELECTRICAL ENGINEERING
Required 137 credits (16 of which must be numbered 300 or above and 60 of which must be from a 4 year institution) including:

I. General Education Requirements (see University GER listing).

II. The Following Curriculum:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 101</td>
<td>Introduction to Electrical Engineering*</td>
<td>1</td>
<td>First Semester</td>
</tr>
<tr>
<td>EE 201</td>
<td>Introduction to Digital Electronics</td>
<td>2</td>
<td>Second Semester</td>
</tr>
<tr>
<td>EE 202</td>
<td>Electrical Engineering Lab</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Engr 101</td>
<td>Graphical Communication</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Engr 201</td>
<td>Statics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Chem 121</td>
<td>General Chemistry I</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Chem 121L</td>
<td>General Chemistry Laboratory</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Math 165, 166</td>
<td>Calculus I &amp; II</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Engr 110</td>
<td>Composition I</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Econ 201</td>
<td>Principles of Microeconomics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Arts and Humanities*</td>
<td>3</td>
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Sophomore Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 206</td>
<td>Circuit Analysis</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EE 304</td>
<td>Computer Aided Measurement and Controls</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EE 306, 307</td>
<td>Circuits Laboratory I, II</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>EE 313</td>
<td>Linear Electric Circuits</td>
<td>3</td>
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</tbody>
</table>

University of North Dakota
**B.S. IN ELECTRICAL ENGINEERING**

*(with an Aerospace Focus)*

Required 139 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. The Following Curriculum

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 101</td>
<td>Introduction to Electrical Engineering*</td>
<td>(1)</td>
</tr>
<tr>
<td>EE 201</td>
<td>Introduction to Digital Electronics</td>
<td>(2)</td>
</tr>
<tr>
<td>EE 202</td>
<td>Electrical Engineering Lab.</td>
<td>(1)</td>
</tr>
<tr>
<td>CSci 161</td>
<td>Computer Science II</td>
<td>(4)</td>
</tr>
<tr>
<td>CSci 162</td>
<td>Computer Science II</td>
<td>(4)</td>
</tr>
<tr>
<td>Engl 201</td>
<td>Engineering Systems</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 165, 166</td>
<td>Calculus I, II</td>
<td>(4)</td>
</tr>
<tr>
<td>Chem 121</td>
<td>General Chemistry I</td>
<td>(3)</td>
</tr>
<tr>
<td>Chem 121L</td>
<td>General Chemistry Laboratory</td>
<td>(1)</td>
</tr>
<tr>
<td>Phys 251</td>
<td>University Physics I</td>
<td>(4)</td>
</tr>
<tr>
<td>Engl 110</td>
<td>Composition I</td>
<td>(3)</td>
</tr>
<tr>
<td>Arts and Humanities **</td>
<td>(3)</td>
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<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 206</td>
<td>Circuit Analysis</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 304</td>
<td>Computer Aided Measurement and Controls</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 306, 307</td>
<td>Circuit Analysis I, II</td>
<td>(1)</td>
</tr>
<tr>
<td>EE 313</td>
<td>Linear Electric Circuits</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 452</td>
<td>Microprocessor Hardware</td>
<td>(3)</td>
</tr>
<tr>
<td>(or) CSci 250</td>
<td>Assembly Language Programming</td>
<td></td>
</tr>
<tr>
<td>CSci 242</td>
<td>Data Structures</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 208</td>
<td>Discrete Mathematics</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 265</td>
<td>Calculus III</td>
<td>(4)</td>
</tr>
<tr>
<td>Math 266</td>
<td>Elementary Differential Equations</td>
<td>(3)</td>
</tr>
<tr>
<td>Phys 252</td>
<td>University Physics II</td>
<td>(4)</td>
</tr>
<tr>
<td>Engl 125</td>
<td>Intro to Professional Writing</td>
<td>(3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior Year</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 308</td>
<td>Electronics Laboratory I</td>
<td>(2)</td>
</tr>
<tr>
<td>EE 314</td>
<td>Signals and Systems</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 318</td>
<td>Engineering Data Analysis</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 321</td>
<td>Electronics I</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 421</td>
<td>Electronics II</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 425</td>
<td>Electronics Laboratory II</td>
<td>(1)</td>
</tr>
<tr>
<td>EE 451</td>
<td>Computer Hardware Organization</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 201</td>
<td>Principles of Microeconomics</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 321</td>
<td>Engineering Electives***</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 425</td>
<td>Engineering Electives***</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 452</td>
<td>Microprocessor Hardware</td>
<td>(3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior Year</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 403</td>
<td>Controls Laboratory</td>
<td>(1)</td>
</tr>
<tr>
<td>EE 405</td>
<td>Controls Laboratory</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 409</td>
<td>Distributed Networks</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 318</td>
<td>Electromagnetic Fields</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 480, 481</td>
<td>Senior Design I, II</td>
<td>(3)</td>
</tr>
<tr>
<td>Phil 370</td>
<td>Ethics in Engineering and Science</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 321</td>
<td>Engineering Electives***</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 421</td>
<td>Engineering Electives***</td>
<td>(3)</td>
</tr>
<tr>
<td>Social Science **</td>
<td>(3)</td>
<td></td>
</tr>
</tbody>
</table>

* May be waived for transfer students (substitute science credit required).
** Must include a World Culture course (can be either A&H or SS).
*** Engineering Science Electives: ME 301 (Materials Science), ME 306 (Fluid Mechanics), EE 203 (Mechanics of Materials), EE 202 (Dynamics), ME 314 (Thermodynamics).
**** Technical Electives: Approved by advisor courses in Engineering, Math, Computer Science, Physics, Space Studies, and Physical Science not pre-requisite to any required course in Electrical Engineering, and normally should be a 300 or higher level course.

Some of the following courses may be waived by completing Engr 100 Professional Assessment and Evaluation: EE 101, EE 201, EE 202, EE 304, and EE 797. Phil 370 may also be waived, but not the University’s GER. (For Engr 100 course description see Engineering listing).

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**Electrical Engineering**

109
110 University of North Dakota

101. Introduction to Electrical Engineering. 1 credit. An introduction to the electrical engineering discipline. Recent technologies and practices in electronics, computers, and robotics, composites, carbon fibers, superconductors, etc. On demand.


202. Electrical Engineering Laboratory. 1 credit. Co-requisite: 201. Introduction to design and implementation of digital electronic circuits. F,S

206. Circuit Analysis. 3 credits. Prerequisite: Math 165*. Introduces the foundations of electrical engineering, applying these concepts in the development of the fundamentals of energy conversion, electronics and circuit theory. F,S

304. Computer Aided Measurement and Controls. 3 credits. Prerequisites: Math 165. The principles of the use of a computer in a measurement and control environment are presented. Software is designed to drive interfaces to perform measurement and control algorithms. The software and concepts presented are evaluated in a laboratory environment. F,S


313 Linear Electric Circuits. 3 credits. Prerequisite: EE 206*. Co-requisite: EE 307. Linear electric circuits in the steady state and transient conditions; two-port circuits; Fourier Series simple and polyphase systems. F,S

314. Signals and Systems. 3 credits. Prerequisite: EE 313. Co-requisite: Math 266. The principles of the use of a computer in a measurement and control environment are presented. Software is designed to drive interfaces to perform measurement and control algorithms. The software and concepts presented are evaluated in a laboratory environment. F,S

318. Engineering Data Analysis. 3 credits. Prerequisite: EE 206*. Co-requisite: EE 313. This course will provide undergraduate electrical engineering students with an understanding of the principles of engineering data analysis using basic probability theory and basic statistics theory. Students will have the opportunity to apply these concepts to actual applications and case studies. F,S


397. Cooperative Education. 1-3 credits. Repeatable. Prerequisites: Admission to the electrical engineering degree program. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement among student, department, and employer. F,S

401. Electric Drives. 3 credits. Prerequisite: EE 313. A study of electric drives and their electronic controls, to include relevant power electronic techniques, computer simulation, and laboratory implementation. F,S

403. Controls Laboratory I. 1 credit. Co-requisite: EE 405. Hands-on experience in control of linear dynamic systems and programmable logic controllers. F

405. Control Systems I. 3 credits. Prerequisites: EE 314 and Math 266. Corequisite: EE 403. Dynamic response and modeling of linear control systems; stability analysis; design of controllers using frequency domain technique. S

406. Control Systems II. 3 credits. Prerequisites: EE 313 and 316. Fundamentals of transmission lines. S

410. Communications Engineering. 3 credits. Prerequisites: EE 314 and Mathematical definition of random and deterministic signals and a study of various modulation systems. On demand.


424. Electrical Circuits. 3 credits. Prerequisite: EE 321. Principles, applications, and design of electronic equipment studied from viewpoint of complete systems. On demand.

425. Electronics Laboratory II. 1 credit. Co-requisite: EE 421. Laboratory work to parallel the material in Electrical Engineering 421. S

428. Robotics Fundamentals. 3 credits. Prerequisites: Math 266 or consent of instructor. Fundamentals of robotic systems: modeling, analysis, design, planning, and control. The project provides hands-on experience with robotic systems. On demand.

430. Radiating Systems. 3 credits. Prerequisite: EE 409. Analysis and synthesis of a variety of telecommunication and sensor systems. On demand.

434. Microwave Engineering. 3 credits. Prerequisite: EE 409 or consent of instructor. Review of transmission lines and plane waves, analysis of microwave networks and components using scattering matrices, analysis of periodic structures, transmission and cavity type filters, high frequency effects, microwave oscillators, amplifiers, and microwave measurement techniques. On demand.

451. Computer Hardware Organization. 3 credits. Prerequisites: EE 201 and 304 or consent of instructor. The study of complete computer systems including digital hardware interconnections and organization and various operation and control methods necessary for realizing digital computers and analog systems. On demand.

452. Microprocessor Hardware. 3 credits. Prerequisites: EE 201 and EE 304 or consent of instructor. The study of the interaction of microprocessor hardware with devices so that communication and control of the computer can be accomplished with external signals. On demand.


481. Senior Design. 3 credits. Prerequisite: Consent of instructor. First course in the two-course capstone design experience for the electrical engineering undergraduate degree, emphasizing design methodologies, systems engineering, teamwork, and oral/written/interpersonal communications. Emphasis will be placed on oral presentation and written report generation with critique. The two course sequence, EE 480 and EE 481, will satisfy three credits of the GER Communication requirement. F,S


490. Electrical Engineering Problems. 1-9 credits. Repeatable to maximum of 9 credits. Prerequisite: Approval by departmental faculty member under whom the electrical engineering problem is studied. F,S

*Course must be completed with a “C” or better.

Courses

100. Professional Assessment and Evaluation. 1 credit. Prerequisites: Work experience and/or technician school training plus completion of Chemistry I, Physics I and II, and Calculus I, II, and III. (See CBE, EE and ME curricula listings) Required S-U grading. This course is designed for students with industrial experience. Students complete a portfolio documenting educational and work experiences for evaluation, and individualized curriculum plans are developed. Various academic programs in engineering are also introduced. Based on the assessment and evaluation, some engineering requirements may be waived.

101. Graphical Communication. 3 credits. Development of visualization, technical communication, and documentation skills. 3-D geometric modeling as applied to CAD applications using current methods and techniques commonly found in industry. Introduction to engineering, design and team problem solving. F,S

200. Computer Applications in Engineering. 2 credits. The fundamentals of digital computer programming are presented with special emphasis on high-level language and engineering applications. The fundamentals of PC-based software applications and operating systems are also presented. F,S


212. Dynamics. 3 credits. Prerequisite: EE 314. Simple particle and rigid body kinematics/kinetics. Vector approach to principles of dynamics. Newton’s laws of motion, work-energy, and impulse-momentum principles for particle and rigid body motion. F,S

230. Mechanics of Materials. 3 credits. Prerequisite: Engr 201. Simple stress and strain, mechanical properties of materials, axial load, torsion, shear and bending
moment, flexure and shear stresses in beams, combined stresses, stress transformation, statically indeterminate members and columns. F.S

416, Engineering Economy. 3 credits. Prerequisite: Econ 201. Simple evaluation of the economic merits of alternative solutions to engineering problems. Evaluations emphasize the time value of money. F.S

Engineering Science Minor

The Engineering Science Minor is available to non-engineering students, and requires the completion of 20 credit hours of approved course work, as detailed below with a cumulative GPA of 2.0 or above:

Engineering Science Minor Curriculum (20 Credits)

Required Courses - 12 Credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engr 203 Statics</td>
<td>3</td>
</tr>
<tr>
<td>EE 206 Circuit Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Engr 202 Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>Engr 203 Mechanics of Materials</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>CE 306 Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>ME 306 Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
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</tr>
<tr>
<td>ME 341 Thermodynamics</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Courses - 8 Credits

Any regularly offered course at the 200 or higher level with the prefix Engr, CE, EE, GE or ME may be used as elective.

The minor program is administered through the SEM Dean’s Office.

English Language and Literature

(Engl)

McKenzie (Chair), Anderegg, Beard, Carson, Carmichael, Coleman, Dixon, Donaldson, Donehower, Huang, Kopraice, Marshall, J. Meek, M. Meek, O’Donnell, Rankin, J. Robison, L. Robison, Wiener, and Wolfe

Both literature in English and the English language are rewarding subjects of study in themselves. Language is the chief mode by which we perceive ourselves and the world; literature, like the other arts, is a way of finding coherence in experience, of giving it shape. The place of English studies among the liberal arts makes them a good foundation for careers of humane work in writing, teaching, publishing, business, librarianship, and the professions of law, medicine, the ministry, and diplomacy, among other fields.

English 271 and 272 (3 hours each) are courses at the sophomore level recommended for English majors. The courses require a reasonable degree of ability to analyze orally and in writing a wide variety of literary texts. These courses are introductory to all other literature courses. Students who become English majors after their sophomore year or after having taken 221, 222, and 224, or their equivalents, may substitute these courses with the approval of their advisers.

Other courses for the 36-hour English major must be approved by each student’s English Department adviser. Programs of study are intended to be tailored to each student’s needs and plans, and it is in recognition of a wide range of interests in literature and language that the student is required to work out the specific selection of courses with an adviser. At the same time, the Department recognizes the importance of breadth in English studies and therefore requires that the English major complete at least three credits in any five of six groups of courses: (1) historical period or survey courses, (2) major author courses, (3) genre courses, (4) thematic courses, (5) language and linguistic courses, and (6) writing courses. Students without a departmental adviser should see the Chair of the Department.

Students planning or considering graduate work in English are urged to take a balanced program of literature courses to include a range of genres, periods, and major-author courses. They are further urged to continue their study of foreign languages beyond the minimum required for the undergraduate major, and to consult graduate catalogs for stipulations of undergraduate requirements.

Students concentrating in language and linguistics will ordinarily take much of their coursework in area 5. They will also note these related courses taught during the summer: Linguistics 450, Articulatory Phonetics; Ling. 452, Syntax and Morphology I; Ling. 470, Introduction to Sociolinguistics; Ling. 480, Second Language Acquisition Theory and Practice. Linguistics courses with prerequisites of other linguistic courses are Ling. 451, Phonology I, and Ling. 460, Ethnographic Methods in Field Linguistics. A maximum of 10 credits of these Summer Institute of Linguistics courses may be applied to the English major. Students are urged to take more than one foreign language if they are considering graduate work in languages and linguistics.

The following is a listing of courses grouped in categories to fulfill distribution requirements for the major. At least 3 credits must be taken in each of five of the following six categories. A minimum of 2 credits is acceptable in category six.

1. Historical period or survey courses, including:

   241, 242 World Literature I & II
   265 Native American Literature (when applicable and approved)
   299 Special Topics (when applicable and approved, e.g., The Twenties
   301, 302 Survey of English Literature
   303, 304 Survey of American Literature
   357 Women Writers and Readers (when applicable and approved)
   365 Black American Writers (when applicable and approved)
   369 Literature and Culture
   401 Studies in Medieval Literature
   403 Studies in Colonial American Literature
   404 Studies in Renaissance Literature
   405 Studies in Restoration and Eighteenth Century (English) Literature
   406 Studies in Nineteenth Century Literature
   407 Studies in Twentieth Century Literature
   415 Special Topics in Literature (when applicable and approved, e.g., Nineteenth Century American Humor, Restoration Satire, Modern Canadian Literature

2. Major author courses, including:

   299 Special Topics (when applicable and approved)
   315, 316 Shakespeare
   415 Special Topics in Literature (when applicable and approved, e.g., Keats, Melville, Dickinson, Faulkner

3. Generic courses, including:

   221 Introduction to Drama
   222 Introduction to Poetry
   224 Introduction to Fiction
   225 Introduction to Film
   265 Native American Literature (when applicable and approved)
   299 Special Topics (when applicable and approved, e.g., The Modern Short Story
   320 Studies in American Fiction
   321 Studies in American Poetry
   322 Studies in American Drama
   330 Studies in English Fiction
   331 Studies in English Poetry
   332 Studies in English Drama
   357 Women Writers and Readers (when applicable and approved)
   359 Young Adult Literature
   365 Black American Writers (when applicable and approved)
   369 Literature and Culture (when applicable and approved)
   409 Art of Cinematic Drama
   415 Special Topics in Literature (when applicable and approved, e.g., Modern European Drama, Russian Fiction, Twentieth Century Lyric Poetry
4. Thematic courses, including:
299 Special Topics (when applicable and approved), e.g., The Literature of the Sea, The Faust Legend in Modern Literature
357 Women Writers and Readers (when applicable and approved)
359 Young Adult Literature
365 Black American Writers (when applicable and approved)
415 Special Topics in Literature (when applicable and approved), e.g., Biblical Literature, Literature of County Love, Literature of Empire

5. Language and Linguistics courses, including:
161, 162 American Indian Languages I and II
299 Special Topics (when applicable and approved)
309 Modern Grammar
370 Language and Culture
417 Special Topics in Language, e.g., Transformational Grammar, Classical Rhetoric
418 Second Language Acquisition
419 Teaching English as a Second Language
442 History of the English Language

6. Writing courses, including:
308, 408 Advanced Composition I, II
305 Creative Writing (the course may be repeated once for credit)
411, 412 The Art of Writing (each course may be repeated once for credit)

College of Arts and Sciences

B.A. WITH MAJOR IN ENGLISH

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing)

II. The Following Curriculum:

Major Requirements — 36 hours including 5-6 hours of introductory literature, preferably:
Engl 271..........Literary Analysis I
Engl 272..........Literary Analysis II
(3)
(3)
English courses from the following categories—at least 3 hours from each of five of the six categories—as selected in consultation with major advisor: Twenty hours must be at the 300 and 400 level (30-31)

A historical period or survey courses
Major author courses
Course courses
Thematic courses
Language and Linguistics courses
Writing courses

Required in other departments:

Level IV proficiency in a language other than English

Other studies: English majors are encouraged to explore other fields related to literature and language, notably: history, philosophy, art history, theatre arts, speech, journalism, communication, radio-television, and religious studies.

B.A. WITH MAJOR IN ENGLISH

Teacher Certification

Students seeking secondary teacher certification in English must complete the following program:

- The English major (described above), including level-four proficiency in a foreign language
- Required in the major: English 309 and either English 308 or 408
- Recommended in the major: English 209, 301, 302, 303, 384, 315, 316, 357, 359, 365, and 367.
- Students are advised to create a major in which courses that satisfy the demands of a career in secondary teaching are balanced against the broader range of courses offered by the Department.
- Admission to the Secondary Program, normally after taking T&L 325 (see College of Education and Human Development listing).
- The Program in Secondary Education (see Secondary Education listing), to include:
  - T&L 400......Methods and Materials of Teaching Reading and Literature (fall only)
  - T&L 401......Methods and Materials of Teaching Writing and Language (spring only)
  - A full semester T&L 487 (student teaching), normally taken during the semester of graduation

English majors seeking secondary certification must have an advisor in both the English Department and the Department of Teaching and Learning.

MINOR IN ENGLISH

Required: 20 hours, including 5-6 hours of introductory literature, preferably:
Engl 271..........Literary Analysis I
Engl 272..........Literary Analysis II
(3)
(3)
English electives numbered 300 or above
(14-15)

Students seeking secondary certification in another discipline who wish to achieve a minor in English should take the following courses as part of the minor: English 309 and either English 308 or 408.

Courses

110. College Composition I 3 credits. Immersion in college-level critical reading and expository writing, emphasizing revision and careful preparation of manuscripts. Does not apply to English major or minor. F,S
120. College Composition II 3 credits. Prerequisite: Engl 110. Continues the work of College Composition I but emphasizing the production of college-level research and writing. Does not apply to English major or minor. F,S
125. Technical and Business Writing 3 credits. Prerequisite: Engl 110. Continues the work of College Composition I but emphasizing the production of college-level research and writing applicable to business and technical fields. Does not apply to English major or minor. F,S
161. American Indian Languages I 3 credits. Introductory study of one of the Native American languages of North Dakota. Repeatable for different languages. F
162. American Indian Languages II 3 credits. Continuing introductory study of one of the Native American Languages of North Dakota; repeatable for different languages. F

209. Introduction to Linguistics 3 credits. An introduction to the nature of language, phonology, grammar, semantics, and historical, geographical, social, and developmental aspects of language. F,S

221. Introduction to Drama 2 credits. Drama studied as a literary type, for understanding and for critical appreciation. F,S

222. Introduction to Poetry 2 credits. Poetry studied as a literary type, for understanding and for critical appreciation. F,S

224. Introduction to Fiction 2 credits. Fiction studied as a literary type, for understanding and for critical appreciation. F,S

225. Introduction to Film 2 credits. The study of film drama, concentrating on appreciation and evaluation of motion pictures. F,S

241. 242. World Literature I & II 6 credits. Great literature of western Europe, or in the European tradition, studied with emphasis upon intellectual and cultural values. F,S

265. Native American Literature 3 credits. Writings by and about American Indians, studied for understanding and critical appreciation. S

271, 272. Literary Analysis I and II 3 credits each. Recommended for English majors. Prerequisite: English 120. Students read, write about and discuss significant literary texts in English. A critical introduction to advanced literature courses. F,S

289. Special Topics 1-4 credits. A course for undergraduate students, on topics varying from term to term. F,S

301, 302. Survey of English Literature 6 credits. English literature from its beginnings to the twenty-first century. F,S

303, 304. Survey of American Literature 6 credits. The literature of the United States from its beginnings to the twenty-first century. F,S

305. Modern Grammar 3 credits. Various approaches to the structure of modern English, with emphasis on syntax variation and applications to the problems of teaching. F

315, 316. Shakespeare 6 credits. Shakespeare’s works studied in chronological sequence. F,S

320. Studies in American Fiction 3 credits. Prior course recommended: 224, 271 or 272. Repeatable when topics vary. F


322. Studies in American Drama 3 credits. Prior course recommended: 224, 271 or 272. Repeatable when topics vary. S

330. Studies in English Fiction 3 credits. Prior course recommended: 224, 271, or 272. Repeatable when topics vary. S


332. Studies in English Drama 3 credits. Prior course recommended: 224, 271 or 272. Repeatable when topics vary. F

337. Women Writers and Readers 3 credits. Literature by and about women, examining the social, historical, and aesthetic significance of the works. Repeatable when topics vary. F

359. Young Adult Literature 3 credits. The study of literature for and about young adults (from the middle school through the high school years), examining the social, historical, and aesthetic significance of the works. S/2

365. Black American Writers 3 credits. Writing by Black Americans studied for understanding and critical appreciation. S
Entrepreneurship

S. Moser (Interim Facilitator)

Entrepreneurship is a multidisciplinary program within the College of Business and Public Administration. This program is primarily directed toward students who want to acquire the skills and experience to start new for-profit and not-for-profit ventures. The entrepreneurship faculty drawn from the faculties of economics, management, English, accounting, finance, and industrial technology offer various courses and programs for both business and non-business majors. The College offers a five course entrepreneurship track for non-business majors and a three course entrepreneurship track for business majors. The entrepreneurship Track is designed to provide students the entrepreneurial skills for either working within an existing entrepreneurial business or establishing their own new ventures. A principal element of the major is the development of a venture plan inEntr 385-Venture Initiation that is refined in the required major courses, ultimately resulting in a plan that is sophisticated enough to be financed and initiated by the student.

Course Requirements

I. Core Courses

B.A. WITH MAJOR IN ENTREPRENEURSHIP

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

A. General Education Requirements (see University GER listing).

B. The College of Business and Public Administration Requirements (see BPA listing) and including:

1. Pre-Business Core (Required 34 hours)

   - Acct 200, 201: Elements of Accounting I & II
   - Econ 201, 202: Principles of Microeconomics, Principles of Macroeconomics
   - Econ 210: Introduction to Business and Economic Statistics
   - Mgmt 217: Fundamentals of Management Information Systems
   - Math 104, 146: Finite Mathematics, Applied Calculus I
   - Poli 115: American Government I
   - Comm 110: Fundamentals of Public Speaking

2. First Year English (Required 11 hours)

   - Eng 111: Introduction to Critical Thinking
   - Eng 112: Introduction to English Literature
   - Eng 215: Introduction to Literature
   - Eng 231: Introduction to American Literature
   - Eng 386: Senior Honors Thesis

3. College of Business and Public Administration (Required 18 hours)

   - Entr 201: The Entrepreneur and the Economy
   - Entr 301: Accounting and Financial Concepts for Entrepreneurs
   - Entr 302: Marketing and Management Concepts for Entrepreneurs
   - Entr 385: Venture Initiation
   - Entr 387: Venture Growth
   - Entr 389: Venture Study
   - Entr 397: Entrepreneurship Internship

II. Business Core (Required 21 hours)

   - Mrkt 311: Introduction to Marketing
   - Mrkt 305: Principles of Management
   - Mgmt 300: Principles of Financial Management
   - Econ 303: Money and Banking
   - Acct 315: Business in the Legal Environment
   - Mgmt 301: Production Management
   - Mgmt 475: Strategic Management

III. Business Core (Required 1-15 hours)

   - Entr 387: Venture Growth
   - Entr 389: Entrepreneurship Internship

Entrepreneurship Track for Business Majors

1. Business Core (Required 21 hours)

   - Entr 201: The Entrepreneur and the Economy
   - Entr 301: Accounting and Financial Concepts for Entrepreneurs
   - Entr 302: Marketing and Management Concepts for Entrepreneurs
   - Entr 385: Venture Initiation
   - Entr 387: Venture Growth
   - Entr 397: Entrepreneurship Internship

Entrepreneurship Track for Non-Business Majors

1. Business Core (Required 21 hours)

   - Entr 201: The Entrepreneur and the Economy
   - Entr 301: Accounting and Financial Concepts for Entrepreneurs
   - Entr 302: Marketing and Management Concepts for Entrepreneurs
   - Entr 385: Venture Initiation
   - Entr 387: Venture Growth

Entrepreneurship Track for Business Majors

1. Business Core (Required 21 hours)

   - Entr 201: The Entrepreneur and the Economy
   - Entr 301: Accounting and Financial Concepts for Entrepreneurs
   - Entr 302: Marketing and Management Concepts for Entrepreneurs
   - Entr 385: Venture Initiation
   - Entr 387: Venture Growth
   - Entr 397: Entrepreneurship Internship

Entrepreneurship Program

1. The Entrepreneur and the Economy (3 credits)

   - Course required for all students in this program.

2. Marketing and Management Concepts for Entrepreneurs (3 credits)

   - Course required for all students in this program.
Family Medicine (FMed)

Baird, Billings, Burns (Chair), Burrell, Curley, Demers, Delorme, Duke, Emery, Greek, Halvorson, Hartson, Jones, Kringle, Mann, Mattson, McBride, Mitchell, Murphy, Olson, Paine, Polovitz, Poolman, Rudd, Rubeck, Schauer, Smith, Tangedahl, Tsuchiya, Westereng, and Ziegler

The Department of Family Medicine offers the B.S. in Athletic Training degree under the auspices of the Division of Sports Medicine. This degree program was formally approved by the North Dakota Board of Higher Education in September, 1990. Athletic Training was recognized as an allied health field by the AMA in June, 1990.

The degree program entails a four-year curriculum designed to prepare the student for an entry-level position in the field of athletic training. Upon completion of the curriculum, the student will be prepared to take the NATA BOC Certification Examination.

Admission to the curriculum is competitive. Students are selected using the following criteria: academic performance (2.75 GPA minimum), departmental application, references, 100 hours of directed observation, and completion of FMed 101, 207L, 207, 213, 150 and 150L. FMed 310. It is recommended that students applying for this program meet with the academic coordinator early in their freshman year.

Students pursuing the Athletic Training degree are encouraged to utilize the electives in this program to prepare for advanced study. Suggested areas of study include: post-graduate study in exercise science, physical therapy or medicine. The Athletic Training program is accredited by the Committee for Accreditation of Allied Health Education Programs (CAAHEP).

School of Medicine

B.S. IN ATHLETIC TRAINING

Required 129 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. The following curriculum:

Pre-Admission Courses

The student must earn C or better in the following courses to be admitted in the program.

Biol 150/150L, General Biology I and Laboratory, which is a prerequisite for the following courses.

The student must earn B or better in the following courses to be admitted in the program.

FMed 101, Orientation to Athletic Training, and

FMed 207, Prevention and Care of Athletic Injuries.

FMed 207L, Prevention and Care of Athletic Injuries Lab.

At the time of application to the Athletic Training Program, the student must have completed or be enrolled in all of the above courses. In addition, the student must show proof of the First Aid and CPR certifications or enrollment in:

PEXS 110, First Aid and CPR (2)

Core Courses

The following core courses are required for BS in Athletic Training:

**Chem 121, 121L, General Chemistry I/Laboratory (4)
Comm 110, Fundamentals of Public Speaking (3)
Chsi 101 & 101L, Introduction to Computer Science and Laboratory (4)
**Engl 110, College Composition I (3)
**Engl 120, College Composition II or 205, Medical Terminology (1)
**Phys 161, 161L, Introductory College Physics I/Laboratory (4)
**Phys 162, 162L, Introductory College Physics II/Laboratory (4)
**Psy 111, Introduction to Psychology (3)
**Psy 241, Statistics for Behavioral Science (4)
**Psyc 250, Developmental Psychology (4)
**Soc 110, Introduction to Sociology (3)

** indicates course satisfies General Education Requirements.

Professional Courses

The following are essential professional courses to become an entry-level athletic trainer:

Anat 204 & 204L, Anatomy for Paramedical Personnel and Lab (5)
FMed 208, Procedures in Athletic Training (1)
FMed 208L, Laboratory Procedures in Athletic Training (1)
FMed 200, Understanding Medicine (3)
FMed 213, Beginning Practicum (1)
FMed 312, Medical Aspects of Sports (2)
FMed 313, Intermediate Practicum (2)
FMed 320, Athletic Training Modalities (2)
FMed 321, Athletic Training Techniques (4)
FMed 321L, Laboratory Athletic Training Rehab. Tech. (1)
FMed 343, Organization Admin. in Athletic Training (2)
FMed 413, Advanced Practicum (3)
FMed 481, Athletic Injury Assessment (4)
FMed 491, Seminar in Athletic Training (2)
FMed 497, Internship in Athletic Training (3)
Nut 240, Fundamentals of Nutrition (3)
PEXS 332, Biomechanics (4)
PEXS 402, Exercise Physiology (4)
PEXS 403, Health Education (2)
PPT 410, Drugs Subject to Abuse (2)
PPT 301, Human Physiology (4)

Courses

101. Orientation to Athletic Training, 1 credit. Overview of the field of athletic training. Survey of the role of the athletic trainer. Films, lectures, and observation in clinical settings. F S

205. Understanding Medicine, 3 credits. An overview of the broad parameters of family medicine. Guest speakers are brought in to discuss various facets of medicine. S

207. Prevention and Care of Athletic Injuries, 2 credits. Corequisite: FMed 207L. An introductory course into the care and treatment of athletic injuries. F S

207L. Laboratory Prevention and Care of Athletic Injuries, 2 credits. Corequisite: FMed 207. A practical laboratory to develop athletic taping skills taught in FMed 207. F S

208. Procedures in Athletic Training, 1 credit. Prerequisites: FMed 207, 207L, Anat 204, 204L. Corequisite: FMed 208L. This course serves as an orientation class for incoming health services majors. Policies and procedures as well as record keeping are covered. F

208L. Laboratory Procedures in Athletic Training, 1 credit. Prerequisites: FMed 207, 207L, Anat 204, 204L. Corequisite: FMed 208. A course designed to allow stu-
The Department of Finance offers two programs of study—Financial Management and Managerial Finance and Corporate Accounting. The major in Financial Management covers the general areas of managerial finance, investments, real estate, risk management, and insurance. The Financial Management major has been designed to provide students with an appropriate balance between general background knowledge and specific decision-making skills. Foundation courses cover modern finance theory and modeling, including real property analysis and investments. Utilizing the resources available in the Lanternman Investment Center, a state-of-the-art "trading room" environment, students expand their knowledge of investment-related topics, including equities, fixed income instruments, financial derivatives, foreign exchange transactions, and many more. The Managerial Finance and Corporate Accounting degree combines the essential attributes of traditional accounting and managerial finance programs into a combined major that meets the needs of those individuals desiring careers in corporate finance or accounting. Traditionally, accountants recorded transactions and other economic data and reported the results in the form of financial statements and internal managerial reports. Financial managers have typically forecasted, planned, and analyzed accounting data and presented the accounting data in formats convenient for decision making. There were some distinctions as well as overlaps in knowledge and skills needed in the two disciplines in the past. Recently, business has undergone a shift in responsibilities within the areas of accounting and finance. Specifically, the areas of financial and managerial accounting and the various topics in corporate finance such as corporate finance theory, financial statement analysis and investments have become interdependent for those seeking career opportunities in internal management and control, treasury management, and strategic financial management.

B.B.A. WITH MAJOR IN FINANCIAL MANAGEMENT

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. The College of Business and Public Administration Requirements (see BPA list).

III. The Following Curriculum (suggested sequence)

Finance

(TFin)

T. Nelson (Chair), Beneda, Haskins, Lee and Smith

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
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<tr>
<td>Acct 200*</td>
<td>(3)</td>
<td>Elements of Accounting I</td>
</tr>
<tr>
<td>Econ 201*</td>
<td>(3)</td>
<td>Principles of Macroeconomics</td>
</tr>
<tr>
<td>Econ 210*</td>
<td>(3)</td>
<td>Introduction to Business and Economic Statistics</td>
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<tr>
<td>Arts and Humanities</td>
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Second Semester

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<tr>
<td>Acct 201*</td>
<td>(3)</td>
<td>Elements of Accounting II</td>
</tr>
<tr>
<td>Acct 315</td>
<td>(3)</td>
<td>Business in the Legal Environment</td>
</tr>
<tr>
<td>Mgmt 317</td>
<td>(3)</td>
<td>Fundamentals of Management Information Systems</td>
</tr>
<tr>
<td>Econ 202*</td>
<td>(3)</td>
<td>Principles of Macroeconomics</td>
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<tr>
<td>Arts and Humanities</td>
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Junior Year

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<tbody>
<tr>
<td>Acct 301*</td>
<td>(4)</td>
<td>Intermediate Accounting I</td>
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<tr>
<td>Mgmt 300*</td>
<td>(3)</td>
<td>Principles of Management</td>
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<tr>
<td>Mktg 385*</td>
<td>(3)</td>
<td>Marketing Foundations</td>
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<tr>
<td>Fin 310*</td>
<td>(3)</td>
<td>Principles of Financial Management</td>
</tr>
<tr>
<td>Fin 321</td>
<td>(3)</td>
<td>Real Estate Finance and Investment</td>
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Senior Year

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<th>Course</th>
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<tbody>
<tr>
<td>Fin 410*</td>
<td>(3)</td>
<td>Cases in Managerial Finance</td>
</tr>
<tr>
<td>Fin 420*</td>
<td>(3)</td>
<td>Investment Analysis and Portfolio Management</td>
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<td>Elective in Finance Management Major</td>
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Second Semester

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<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
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<td>International Financial Management</td>
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<tr>
<td>Mgmt 475*</td>
<td>(3)</td>
<td>Strategic Management</td>
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<tr>
<td>Elective in Finance Management Major</td>
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</table>

*These courses have prerequisites. Check course descriptions.

Plus Electives: Minimum of 17 semester hours of non-business electives to meet the 63 semester hour requirement. Financial Management majors must complete 6 semester hours, selected with approval of adviser from the following: Acct 302, 312; Econ 308, 309, 324;
B.B.A. WITH MAJOR IN MANAGERIAL FINANCE AND CORPORATE ACCOUNTING

Required 128 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. College of Business and Public Administration Requirements (see BPA College listing) and including:

- Acct 200, 201: Elements of Accounting I & II (6)
- Acct 315: Business in the Legal Environment (3)
- Econ 201: Principles of Microeconomics (3)
- Econ 202: Principles of Microeconomics (3)
- Econ 210: Elementary Business and Economic Statistics (3)
- Econ 303: Money and Banking (3)
- Math 104: Finite Mathematics (3)
- Math 146: Applied Calculus I (3)
- Mgmt 300: Principles of Management (3)
- Mgmt 301: Production Management (3)
- Fin 310: Principles of Financial Management (3)
- Mgmt 475: Financial Management (3)
- Mgmt 305: Marketing Foundations (3)
- Poli 115: American Government I (3)
- Comm 110: Fundamentals of Public Speaking (3)

One course selected from the following:

- Psy 111: Introduction to Psychology (3)
- Soc 110: Introduction to Sociology (3)
- Anth 171: Introduction to Cultural Anthropology (3)

III. The following Major Requirement (36 credits)

- Acct 218: Computer Applications in Business (2)
- Acct 301, 302: Intermediate Accounting I & II (4,3)
- Acct 309: Accounting Information Systems (3)
- Acct 320: Accounting for Production (3)
- Fin 340: Intermediate Financial Management (3)
- Fin 350: Financial Information Systems (3)
- Fin 340: Capital Market Financing and Investment Strategies (3)
- Fin 410: Cases in Financial Management (3)

At least three electives from upper division Accounting (Acct) or Finance (Fin) courses (9)

Courses

220. Personal Investing. 3 credits. Investment concepts for individual investors who are, or will be, actively developing and monitoring their own investment portfolio. Covers basic analysis techniques, investment vehicles, strategies for implementing investment goals in a portfolio context, risk-return tradeoffs, and sources of investment information. Not available to students who have successfully completed Fin 420 or its equivalent. F,S

230. Principles of Real Estate. 3 credits. Principles of real property with an emphasis on home ownership: real property rights, the process for transferring those rights, the impact of taxation, and concepts of city development. Career options in real estate, including brokerage, appraisal, lending, and property management. This is an elective available to all UND students. F

250. Personal Finance. 3 credits. The personal financial planning and management process: goal identification and budgeting; minimizing tax liability; uses and costs of various forms of credit; buying, selling and/or leasing real estate, automobiles and other major items; life, health, property and income insurance; various investment options; the retirement planning process; and estate planning options. The role of financial planning professionals and financial planning as a career option are also discussed. F,S

310. Principles of Financial Management. 3 credits. Prerequisites: Acct 201, Ecls 217. This course introduces students to asset management, cost of capital, dividend policy, valuation, capital structure planning, and working capital management. Forms of business organizations and tax environment are surveyed. Managerial implications of current developments in national and international capital markets are reviewed. F,S

321. Real Estate Finance and Investment. 3 credits. Nature of real estate finance, financial sources, role of government, real estate financial instruments, loan processing, defaults and foreclosures in real estate finance, fundamentals of real estate investment analysis. F,S

324. Real Estate Appraisal. 3 credits. Nature of value; appraisal process; analysis of neighborhoods, land and improvements; cost, market data and income approach to value; appraisal report; code of ethics. F

340. Intermediate Financial Management. 3 credits. Prerequisite: Fin 310. Integrated coverage of topics in finance theory. Includes capital asset pricing model, arbitrage pricing theory, option pricing model and futures market, capital structure theory, the signaling hypothesis, the agency problem, income measurement from the perspective of investors and financial managers. F,S,SS

350. Financial Statement Analysis. 3 credits. Prerequisites: Acct 301 and Fin 310. Students interpret, restate, evaluate, and forecast financial statements used to report financial performance; and analyze risk and firm value based on reported financial statements. Analysis incorporates accounting, financial, and economic models and data; and describes various reporting regulations, principles, rules, standards, and interpretations. The course includes an investigation of current issues and debates in financial statement analysis. F,S

360. Capital Market Pricing and Investment Strategies. 3 credits. Prerequisite: Fin 310. Covers analysis and procedures for implementing particular financing and investment plans in financial markets. Includes financing and investment through commercial banks, investment banks, pension funds, venture capital sources, insurance companies, limited partnerships. F,S

397. Cooperative Education. 1-6 credits. May be repeated to a total of 12 credits. Prerequisites: Acct 200, 201, Ecls 217; Econ 201, 202, and 210; approval by Department. On-the-job compensated work experience in various areas of Finance. S/U grading only. F,S

399. Cases in Managerial Finance. 3 credits. Prerequisites: Fin 340, 350, 360. Senior standing. Introduces students to construction and utilization of financial management decision models using case study examples. Topics evaluated include working capital management, capital budgeting, cost of capital, capital structure, dividend policy, valuation, risk-return, and special topics of financial management. Students are required to develop original simulation models, prepare formal case reports, and orally and visually present their results. F,S

420. Investment Analysis and Portfolio Management. 3 credits. Prerequisites: Fin 340, 350, and 360. Comprehensive study of methods used to evaluate securities. Includes formulation of investment strategy and analysis, design of portfolios for classes of individual investors and institutions, fundamental analysis, portfolio performance evaluation. Extensive use of financial databases and software. F,S

430. International Financial Management. 3 credits. Prerequisites: Fin 310 and senior standing. Financial management implications of exchange risk exposure, accounting conventions, international constraints on capital flows. Other topics include multi-national investment management and related financing problems, taxation, working capital management. F,S

450. Managing Financial Institutions. 3 credits. Prerequisite: Fin 310. Principles of asset/liability and portfolio management as they apply to the balance sheets and income statements of financial institutions. Includes management of assets and liabilities in the context of interest rate risk. Considers gap management, duration, financial futures, interest rate swaps, and securitization with the goal of profit maximization. F,S

491. Senior Topics in Finance. 3 credits. Repeatable to 6 credits. Prerequisites: Fin 340 and Fin 350. Multiple sections covering different topics may be offered in any one semester. Designed for Financial Management majors. Provides opportunities for in-depth study beyond that of regularly scheduled courses. May be seminars, workshops, or lectures. F,S

492. Readings and Research in Finance, 1-3 credits. Repeatable to 6 credits. Prerequisite: Fin 310 and approval by division. Designed for students with an interest in finance topics not covered in regularly scheduled courses. F,S

497. Internship in Finance, 1-4 credits. Repeatable to 12 credits. Prerequisites: Acct 200, 201, Ecls 217; Econ 201, 202, 210, and approval by department. Guided practical experience in managerial finance, investment management, real estate, and insurance with public and private sector enterprises. S/U grading only.

Courses

Fine Arts (FA)

150. Introduction to the Fine Arts. 3 credits. Introduction to the fundamental principles of the Fine Arts — Visual Arts, Music, Theatre, and Dance — followed by examples of the interaction of the arts in selected cultures from history and around the world and at a variety of campus arts events to further the appreciation of the importance of the fine arts to the individual and community. F,S

Forensic Science

Williams

The undergraduate major in Forensic Science is designed to provide students from varied backgrounds and academic interests with a curriculum in the general forensic sciences. This curriculum will serve
as a preparation for a baccalaureate-level career in criminalistics and law enforcement or as preparation for post-graduate education in the forensic sciences.

**College of Arts and Sciences**

**B.S. WITH A MAJOR IN FORENSIC SCIENCE**

Required: 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. The Following Curriculum:

52 Major Credits including:

Required Courses (15 credits):

- ANTH 345 Forensic Science............................... (3)
- ANTH 346 Analysis of Forensic Evidence................. (3)
- CT 210 Introduction to Policing.......................... (3)
- CT 352 Criminal Investigation............................ (3)
- CT 353 Law for Criminal Justice System................ (3)

3 credits from:

- BIOL 470 Biometry........................................ (3)
- SOC 326 Sociological Statistics.......................... (3)

20 credits from:

- BIOL 150/151 General Biology I & II..................... (6)
- BIOL 152/152L General Biology Laboratory I & II....... (2)
- CHEM 121/121L General Chemistry I & I Lab.............. (6)
- CHEM 122/122L General Chemistry Lab I & II............ (2)
- PHYS 130/130L Natural Science — Physics............... (4)

8 credits from:

- CHEM 240 Survey of Organic Chemistry.................. (4)
- CHEM 130 Quantitative Analysis.......................... (4)
- CHEM 333 Introductory Environmental, Clinical, and Forensic Chemical Analysis......................... (4)

ELECTIVES

6 credits from:

- ANAT 204 Anatomy for Paramedical Personnel............ (3)
- ANTH 440 Forensic Anthropology........................ (3)
- ANTH 441 Forensic Anthropology Field School.......... (6)
- BIOL 136 Systematic Botany................................ (4)
- BIOL 315 Genetics........................................... (3)
- BIOL 363 Entomology........................................ (4)
- CHEM 240 Survey of Organic Chemistry.................. (4)
- CHEM 130 Quantitative Analysis.......................... (4)
- CHEM 333 Introductory Environmental, Clinical, and Forensic Chemical Analysis......................... (4)

**General Studies**

T. Rand, Adviser

The Bachelor of General Studies (B.G.S.) degree will offer an option for advanced level students for whom a more traditional academic program proves not to be feasible. The B.G.S. will also offer a general degree opportunity to non-traditional and distance learners studying with the Division of Continuing Education. In all cases, students must have their course of study approved by a General Studies committee or a representative of the Dean of the College of Arts & Sciences.

**College of Arts and Sciences**

**B.G.S. WITH MAJOR IN GENERAL STUDIES**

Required: 125 credits (60 of which must be from a 4-year institution and 36 of which must be numbered 300 and above) including:

I. General Education Requirements (see University GER listing).

II. A curriculum approved by the College of Arts & Sciences.

**Geography (Geog)**

Edwards, Hansen, Hemmasi, Munski, Rundquist, Seidel, and Todhunter (Chair)

The Department of Geography offers major and minor programs in the College of Arts and Sciences. The principal programs of study include human geography, physical geography, geographic education and geographic techniques. An undergraduate specialization in community and urban development can be designed that provides the education and training necessary for students to enter the field of rural and urban development. An undergraduate specialization in environmental geography can also be structured to prepare students for a career in environmental management. The undergraduate program is designed to provide either a broad liberal arts education, or to prepare students for graduate study or for a professional career in government, industry, or education in a wide variety of fields related to urban and regional planning, economic development, environmental management, mapping, geographic information systems, or geographic education.

The Geography minor is extremely flexible and can provide related preparation for students in anthropology, atmospheric science, aviation, biology, business, communications, education, geology, history, international business, meteorology, public administration, recreation and leisure studies, sociology or space studies.

The Department of Geography has a modern computer laboratory and wet laboratory for work related to remote sensing, digital image processing, computer-assisted mapping, geographic information systems, air photo interpretation, quantitative methods, spatial analysis and field methods. It also maintains a Census Data Center for information related to the northern Plains.

**College of Arts and Sciences**

**B.S. WITH A MAJOR IN GEOGRAPHY**

Required: 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. The following core curriculum courses for A, B, and C options (19 credits):

- Geog 121/L Global Physical Environment/Lab................ (4)
- Geog 151/L Human Geography...................................... (3)
- Geog 161/L World Regional Geography......................... (3)
- Geog 377/L Quantitative Applications in Geography/Lab...... (3)
- Geog 471/L Cartography and Computer-Assisted Mapping/Lab.. (3)
- Geog 474/L Introduction to Geographic Information Systems (3)

III. Select one of the following options:

A: Liberal Arts Emphasis

This program provides a comprehensive background to geography. It is designed for those students who are undecided on a career specialization and are interested in a broad survey of the field of geography.

General Electives (17 credits)

Electives must include a minimum of one course from each of the disciplines of human geography, physical geography, regional geography, and geographic techniques.

B: Community and Urban Development Emphasis

This program provides an overview of geography as well as a thorough introduction to community and urban development. It is intended for students wishing to pursue graduate work or entry-level jobs in economic development, urban planning, transportation and tourism.

Electives systematic courses (9 credits) from:

- Geog 500 Special Topics in Geography........................ (1-3)
- Geog 352 Economic Geography.................................. (3)
- Geog 354 Conservation of Resources........................................ (3)
- Geog 452 Selected Topics in Economic Geography........... (3-5)
- Geog 453 Historical Geography................................. (3)
- Geog 457 Urban Geography and Planning........................ (3)
### University of North Dakota

*Electives regional courses (at least 6 credits) from:*
- Geog 262: Geography of North America I (3)
- Geog 263: Geography of North America II (3)
- Geog 264: Geography of North America III (3)
- Geog 462: Geography of North America II (3)
- Geog 463: Regional Geography: Middle East (3)
- Geog 467: Regional Geography: Europe (3)

*Electives technical courses (3 credits) from:*
- Geog 271: Map Use and Interpretation (3)
- Geog 300: Special Topics in Geography (1-3)
- Geog 374/L: Environmental Remote Sensing & Air Photo Interpretation/Lab (3)
- Geog 475: Digital Image Processing (3)

*Recommended in other departments (12 credits):*
- Any combination of courses from the following fields: Economics, Finance, Public Administration, Anthropology, Sociology, History, and other social sciences.

### C. Environmental Geography Emphasis
This program provides an overview of geography and a thorough introduction to the concepts and methods used in environmental management. It is intended for students wishing to pursue graduate work or a professional career in environmental industry, or education in a wide variety of environmentally-related fields.

*Elective systematic courses (at least 11 credits):*
- Geog 121/121L: Global Physical Environment/Lab (4)
- Geog 134/L: Introduction to Global Climate/Lab (3)
- Geog 151: Human Geography (3)
- Geog 154: Conservation of Resources (3)
- Geog 421: Selected Topics in Physical Geography (3-9)

*Elective technical courses (6 credits):*
- Geog 271: Map Use and Interpretation (3)
- Geog 300: Special Topics in Geography (1-3)
- Geog 374/L: Environmental Remote Sensing & Air Photo Interpretation/Lab (3)
- Geog 475: Digital Image Processing (3)

*Required in other departments (12 credits):*
- Any combination of courses from the following fields: Atmospheric Science, Biological Chemistry, Computer Science, Geology, Math, and Physics.

### D. Geographic Education Emphasis
This program provides a comprehensive background to geography. It is designed to prepare the student with the geography education necessary for a secondary school teaching career.

*Required (19 credits):*
- Geog 121/121L: Global Physical Environment/Lab (4)
- Geog 134: Introduction to Global Climate/Lab (3)
- Geog 151: Human Geography (3)
- Geog 154: Conservation of Resources (3)
- Geog 421: Selected Topics in Physical Geography (3-9)
- Geog 453: Historical Geography (3)
- Geog 455: Urban Geography and Planning (3)
- Geog 134/134L: Introduction to Global Climate/Laboratory (4)
- Geog 300: Special Topics in Geography (1-3)
- Geog 322: Natural Hazards (3)
- Geog 334: Climatology (3)
- Geog 421: Selected Topics in Physical Geography (3-9)

*Electives regional courses (at least 6 credits) from:*
- Geog 262: Geography of North America I (3)
- Geog 263: Geography of North America II (3)
- Geog 264: Geography of North America III (3)
- Geog 462: Geography of North America II (3)
- Geog 463: Regional Geography: Middle East (3)
- Geog 467: Regional Geography: Europe (3)

*Electives in Geography:
Students must choose a minimum of 10 credits from one or a combination of the following concentrations, selected with approval of a geography advisor.

### Courses
The geography courses that may be used to satisfy the 4-credit General Education laboratory science requirement are Geography 121 and 134.

*Geography courses that may be used to satisfy the 9-credit General Education social science requirement include: Geography 151, 161, 262, 352, and 354.

**121L. Global Physical Environment, 3 credits.** A study of the patterns of distribution of the physical elements of the global environment. The origin and characteristics of the terrestrial grid, earth-space relations, climate, landforms, vegetation, and soils. F,S,SS

**121L. Global Physical Environment Laboratory, 1 credit.** A basic environmental science laboratory to complement Geography 121. F,S,SS

**134. Introduction to Global Climate, 3 credits.** An introduction to basic atmospheric processes, weather and climate elements, and basic climatic distribution; emphasis is placed upon the factors which control climate and climatic distributions. F,S

**134L. Introduction to Global Climate Laboratory, 1 credit.** An introduction to basic atmospheric processes, weather and climate elements, and basic climatic distribution; emphasis is placed upon the factors which control climate and climatic distributions. F,S

**151. Human Geography, 3 credits.** A systematic analysis of people’s cultural regions including settlement patterns and change via migration and diffusion. F,S

**161. World Regional Geography, 3 credits.** Development of the concept of region with analysis of the relationship of physical and cultural features to the contemporary world situation. F,S

**262. Geography of North America I, 3 credits.** A spatial approach to the development of Canada and the United States which emphasizes the transformation of the cultural landscape by exploring the contributions of the diverse peoples who inhabit the two nation-states and deal with a global economy. S

**263. Geography of North Dakota, 3 credits.** Study of the interrelationships that exist between North Dakota’s physical and cultural environment. Specific topics include geography, climate, flora, prehistoric occupation, historic development, demography, and economic structures. S

**271. Map Use and Interpretation, 3 credits.** An introduction to basic atmospheric processes, weather and climate elements, and basic climatic distribution; emphasis is placed upon the factors which control climate and climatic distributions. F,S,SS

**300. Special Topics in Geography, 1-3 credits.** Repeatable to a six credits. Topic of course will change from semester to semester but will typically emphasize recent developments in geography. F,S,SS

**319. Geography for Teachers, 2 credits.** Geographical concepts and basic philosophies including a survey of the literature which forms the basis for analysis and application of current techniques in the field of geography. F,S

**322. Natural Hazards, 3 credits.** Prerequisites: Geog 121 and 161 or consent of instructor. An overview of the field of natural hazards emphasizing risk assessment, hazard impacts, human vulnerability, and hazard mitigation. F

**334. Climatology, 4 credits.** Prerequisite: Geog 134 or Met 150. An overview of the field of climatology, emphasizing surface transfers of energy and water, the general circulation of the atmosphere, and climate change. Includes a weekly laboratory. S

**354. Conservation of Resources, 3 credits.** Prerequisites: Geog 121 and 161. An overview of the field of natural hazards emphasizing risk assessment, hazard impacts, human vulnerability, and hazard mitigation. F

**354. Conservation of Resources, 3 credits.** Prerequisite: Sophomore standing or consent of instructor. An overview of the field of natural hazards emphasizing risk assessment, hazard impacts, human vulnerability, and hazard mitigation. F

**363. Economic Geography, 3 credits.** Prerequisites: Sophomore standing or consent of instructor. An overview of the field of natural hazards emphasizing risk assessment, hazard impacts, human vulnerability, and hazard mitigation. F

**374. Environmental Remote Sensing & Air Photo Interpretation, 2 credits.** Corequisite: Geog 374L. A thorough examination of optical, infrared, and microwave methods for remote observation of Earth systems, with a focus on the use of aerial and satellite data for addressing environmental problems. The course includes an overview of modern remote sensing systems for data collection at a variety of scales, as well as an introduction to digital image processing. F

**374L. Environmental Remote Sensing & Air Photo Interpretation/Lab (3)**

**374/L. Environmental Remote Sensing & Air Photo Interpretation/Lab (3)**

**374/L. Environmental Remote Sensing & Air Photo Interpretation/Lab (3)**

**347. Cartography and Computer-Assisted Mapping, 3 credits.** Prerequisite: Geog 375. An introduction to the concepts and methods used in environmental management. It is intended for students wishing to pursue graduate work or a professional career in environmental management. F

**375. Cartography and Computer-Assisted Mapping, 3 credits.** Prerequisite: Geog 375. An introduction to the concepts and methods used in environmental management. It is intended for students wishing to pursue graduate work or a professional career in environmental management. F

**375/L. Cartography and Computer-Assisted Mapping/Lab (3)**

**375/L. Cartography and Computer-Assisted Mapping/Lab (3)**

**375/L. Cartography and Computer-Assisted Mapping/Lab (3)**
Geology and Geological Engineering (Geol and GeoE)

LeFever (Chair), Beaver, Forsman, Gerla, Ghassemi, Gosnold, Groenewold, Hartman, Josephs, Korom, Matheney, and Perkins

Our mission is to provide challenging programs in the geosciences adapted not only to the needs of undergraduate and graduate majors, but also non-majors seeking to gain a greater understanding of earth and planetary environments and resources. Our focus is on the geological interpretation and proper utilization of knowledge of materials, surface and internal features, dynamic processes, and developmental histories of Earth and other planetary bodies. Teaching and research are concentrated in the following areas: environmental studies, hydrogeology, geological engineering, sedimentary geology, field mapping, paleontology, surface processes, petrology, geochemistry, planetary geology, geophysics, and tectonics.

For more information about our department and facilities, please visit our web site at www.geology.umd.edu.

UNDERGRADUATE PROGRAMS

Four degrees are offered: the Bachelor of Science in Geology and the Bachelor of Arts with a Major in Geology in the College of Arts and Sciences, and the Bachelor of Science in Geological Engineering and the Bachelor of Science in Environmental Geoscience in the School of Engineering and Mines.

College of Arts and Sciences

B.S. IN GEOLOGY

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. The Following Curriculum:

48-49 major hours, including:

491 Introduction to Introduction to Program.................................................(4)
Geol 102 & 102L...The Earth Through Time and Laboratory......................(4)
Geol 311...Geomorphology........................................................................(4)
Geol 318...Mineralogy.................................................................................(3)
Geol 320...Petrology..................................................................................(3)
Geol 330...Structural Geology.....................................................................(3)
Geol 356...Geoscience Lectures................................................................(1)
Geol 411...Sedimentology & Stratigraphy...............................................(5)
Geol 420...The Evolving Earth...................................................................(3)
Geol 421...Seminar I...................................................................................(1)
Geol 422...Seminar II..................................................................................(1)
Geol 487...Research I..................................................................................(1)
Geol 488...Research II..................................................................................(2)
Geol 494...Senior Thesis............................................................................(1)
Field Geology (Summer; not available at UND)........................................(6)

Two courses from:

Geol 321...Geomorphology.........................................................................(3)
Geol 414...Applied Geophysics.................................................................(3)
Geol 415...Introduction to Paleontology..................................................(4)
Geol 417...Hydrogeology...........................................................................(3)

Required in other departments:

Chem 121, 121L...General Chemistry I & II and Laboratories....................(8)
Engl 110...College Composition I..............................................................(3)
*Engl 125...Technical and Business Writing..............................................(3)
Engr 200...Computer Applications in Engineering(2)
Math 165 & 166...Calculus I & II.................................................................(8)
Phys 211/211L...College Physics I, II and Laboratories..............................(8)
Phys 212/212L...College Physics I, II and Laboratories..............................(8)

One course from:

Math 265...Calculus III..............................................................................(4)
Math 321...Applied Statistical Methods.....................................................(3)
Psych 241...Introduction to Statistics..........................................................(4)

+Required courses approved in engineering, mathematics, foreign language, and other fields of student interest.........................................................(22-24)

*English 120 acceptable alternate course.

Teacher Certification

Students seeking secondary teacher certification in Geology must complete the Department of Teaching and Learning Requirements in Secondary Education. Students seeking certification should follow the curriculum for the B.S. in Geology and select Statistics (Psych...
241, Math 321) rather than Math 265 or Computer Science. The 24 additional hours in science, computer science, statistics, engineering, mathematics, or a foreign language must include courses in Biology, Atmospheric Sciences, and Astronomy.

Geology majors seeking secondary certification must have an adviser both in the Department of Geology and Geologic Engineering and in the Department of Teaching and Learning. Formal admission to Teacher Education is required and is normally sought while the student is enrolled in T&L 325 (see Department of Teaching and Learning listing).

**B.A. WITH MAJOR IN GEOLOGY**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

- General Education Requirements (see University GER listing).
- The Following Curriculum:
  - 40 major hours, including:
    - Geol 101 & 101L....Introduction to Geology and Laboratory.........(4)
    - Geol 102 & 102L....The Earth Through Time and Laboratory ........(4)
    - Geol 311..............Geomorphic Processes and Landscape........(4)
    - Geol 318..........Mineralogy.......................................(3)
    - Geol 320..............Petrology....................................(3)
    - Geol 330..............Structural Geology..........................(3)
    - Geol 356..............Geoscience Lectures........................(2)
    - Geol 420..............The Evolving Earth...........................(3)
    - Geol 422..............Seminar........................................(1)
    - Geology Electives (300 level and above)................................(13)

Required in other departments:

- Computer Science and/or Statistics..............................................(8)
- Chem 121, 121L, 122, 122L...General Chemistry I & II and Laboratories ......(8)
- Math 103.................College Algebra.......................................(3)
- Math 105.................Trigonometry (2)
- Phys 211, 211L, 212, 212L...College Physics I, II and Laboratories ........(8)

One of the following:

- A. Level IV proficiency in a foreign language and 6 hours of Social Sciences and Arts and Humanities beyond the University requirement ..........(22)
- B. Level II proficiency in a foreign language and 14 hours of Social Sciences and Arts and Humanities beyond the University requirement ..........(22)
- C. Social Sciences and Arts and Humanities beyond the University requirement ..........(22)

Nonspecified electives approved by adviser ...........................................(7)

**MINOR IN GEOLOGY**

Required: 20 credits including:

- 7.8 credits from:
  - Geol 101 & 101L....Introduction to Geology and Laboratory...........(4)
  - OR
  - Geol 311..............Geomorphic Processes and Landscape........(4)
- Geol 102 & 102L....The Earth Through Time and Laboratory ..........(4)
- 6 credits from:
  - Geol 103.................Views of the Earth and Planets..................(3)
  - Geol 311..............Geomorphic Processes and Landscape........(4)
  - Geol 322..............Environmental Geology..........................(3)

Remaining electives chosen from Geology courses numbered 214 or higher, not including 301.

**School of Engineering and Mines**

The Geological Engineering curriculum gives the student a strong background in engineering and geology that serves as a foundation for meaningful professional practice. Geological engineering encompasses 1) exploration and extraction of mineral and energy resources, 2) geomechanics, 3) hydrogeology, 4) reclamation and contaminant remediation, 5) environmental site assessment, and 6) natural hazard investigation. These areas of expertise span the gap between civil, mining, environmental engineering and geology. To meet these demands, the curriculum contains a broad background in the physical and social sciences, humanities, communications, mathematics, geology, and engineering topics. The program is accredited by action of the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. Courses in the curriculum are arranged and integrated to provide the student with progressive preparation for engineering evaluation and design. To facilitate the transition from student to professional, the senior year has a capstone experience that incorporates student creativity and sociological and engineering criteria into a major design project.

As the demand for mineral, energy, and water resources increases and population growth and urbanization place a greater strain on the environment, the nation and world will need engineers with a thorough knowledge of geologic materials, processes, and history. The goal of the geological engineering program at the University of North Dakota is to provide students with the engineering skills and geological expertise necessary to assure that geological, social, and environmental factors are incorporated in the design, construction, operation, and maintenance of engineered structures and systems within their natural setting. Through its strong environmental emphasis, the department strives to develop in its engineering graduates keen insight and abilities to design an environmentally sound and sustainable future for humanity.

To achieve this goal, the department has the following objectives for its engineering graduates:

1. Program graduates shall have attained sufficient proficiency to practice geological engineering in at least one of the areas of exploration and production of mineral and energy resources, geomechanics, hydrogeology, reclamation, or site assessment/remediation.
2. Program graduates shall have the ability to competently perform a wide range of design tasks in at least one of the areas of exploration and production of mineral and energy resources, geomechanics, hydrogeology, reclamation, or site assessment/remediation.
3. Program graduates shall have attained sufficient proficiency in discipline-related areas such as mathematics, physical sciences, social sciences, and arts and humanities to enable them to understand technical and nontechnical issues related to the practice of engineering.
4. Program graduates shall be skilled in written, verbal and media-based communication, working in multi-disciplinary teams, geoscience and engineering workstation methods, and research methods.
5. Program graduates shall be prepared to enter a graduate program in geological engineering or geology if they so desire.

**B.S. IN GEOLOGICAL ENGINEERING**

Required: 136 credits including:

- General Education Requirements (see University GER listing).
- The Following Curriculum:
  - Freshman Year
  - First Semester
    - Math 165.................Calculus I........................................(4)
    - Chem 121, 121L, 122L...General Chemistry I, Lab..................(4)
    - Engl 110.................Composition I....................................(3)
    - Geol 311..............Geomorphic Processes and Landscape........(4)
  - Second Semester
    - Math 265.................Calculus II.....................................(4)
    - Phys 252.................University Physics II..........................(4)
    - Engr 200.................Computer Applications in Engineering ......(2)
  - Sophomore Year
    - Phys 252.................University Physics II..........................(4)
    - Geol 311..............Geomorphic Processes and Landscape........(4)
    - Phys 252.................University Physics II..........................(4)
    - Math 165.................Calculus I........................................(4)
    - Chem 121, 121L, 122L...General Chemistry I, Lab..................(4)
    - Engl 110.................Composition I....................................(3)
    - Geol 311..............Geomorphic Processes and Landscape........(4)
  - Junior Year
    - Math 265.................Calculus II.....................................(4)
    - Phys 252.................University Physics II..........................(4)
    - Geol 311..............Geomorphic Processes and Landscape........(4)
  - Senior Year
    - Math 365.................Calculus III.....................................(4)
    - Phys 252.................University Physics II..........................(4)
    - Engr 200.................Computer Applications in Engineering ......(2)
### B.S. IN ENVIRONMENTAL GEOSCIENCE

Required 125 credits, including:

**I. General Education Requirements (see University GIER listing).**

**II. The following Core Curriculum**

<table>
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<tr>
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<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>Engr 201</td>
<td>Statics</td>
<td>(3)</td>
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<td>Geol 320</td>
<td>Petrology</td>
<td>(3)</td>
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<td>EE 206</td>
<td>Circuit Analysis</td>
<td>(3)</td>
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<td>Engr 202</td>
<td>Dynamics</td>
<td>(3)</td>
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<tr>
<td>Econ 204</td>
<td>Principles of Economics I</td>
<td>(3)</td>
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<td>Engr 125</td>
<td>Technical and Business Writing</td>
<td>(3)</td>
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<td>Geol 323</td>
<td>Engineering Geology</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 266</td>
<td>Introduction to Differential Equations</td>
<td>(3)</td>
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<td>Arts and Humanities</td>
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**Junior Year**

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<th>Course Code</th>
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<tr>
<td>Eng 203</td>
<td>Mechanics of Materials</td>
<td>(3)</td>
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<td>Eng 306</td>
<td>Fluid Mechanics</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 341</td>
<td>Thermodynamics</td>
<td>(3)</td>
</tr>
<tr>
<td>Stat 210</td>
<td>Statistical Methods</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 411</td>
<td>Sedimentology &amp; Stratigraphy</td>
<td>(5)</td>
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<tr>
<td>Geol 330</td>
<td>Structural Geology</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 412</td>
<td>Soil Mechanics</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 460</td>
<td>Engineering Economy</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 485</td>
<td>Geological Engineering Design</td>
<td>(3)</td>
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<tr>
<td>Geol 422</td>
<td>Seminar</td>
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<td></td>
<td>Social Science</td>
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<td>Arts and Humanities</td>
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**Senior Year**

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Geol 414</td>
<td>Applied Geophysics</td>
<td>(3)</td>
</tr>
<tr>
<td>Phil 370</td>
<td>M &amp; P; Ethics in Engineering</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 417</td>
<td>Hydrogeology</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 455</td>
<td>Geochronology</td>
<td>(4)</td>
</tr>
<tr>
<td>Geol 484</td>
<td>Geological Engineering Design</td>
<td>(3)</td>
</tr>
<tr>
<td>Eng 460</td>
<td>Engineering Economy</td>
<td>(3)</td>
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<tr>
<td>Geol 422</td>
<td>Seminar</td>
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<td>Social Science</td>
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<td></td>
<td>Arts and Humanities</td>
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**Technical Electives:** 6 credits required from courses approved by Geological Engineering Curriculum Committee.

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### Geology and Geological Engineering

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Geol 418</td>
<td>Hydrogeological Methods</td>
<td>(2)</td>
</tr>
<tr>
<td>Geol 419</td>
<td>Groundwater Monitoring and Remediation</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 475</td>
<td>Digital Image Processing</td>
<td>(3)</td>
</tr>
<tr>
<td>Law 263</td>
<td>Environmental Law</td>
<td>(3)</td>
</tr>
<tr>
<td>Spec 430</td>
<td>Earth System Science</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Courses**

For Geology majors, a grade of C or better is required in Geol 518 before any other 300 or 400 numbered courses are taken.

101. Introduction to Geology, 3 credits. Introduction to the dynamics of the Earth—volcanoes, earthquakes, plate tectonics, streams, groundwater, glaciers, waves, wind, and landslides, with emphasis on the environmental applications of these processes. Introduction to the tools of the geologist—rocks, maps, and aerial photographs. Geol 101L may be taken concurrently. F,S,SS

101L. Introduction to Geology Laboratory, 1 credit. Prerequisite or corequisite: Geol 101. An introductory laboratory to complement Geol 101. Field trip(s) included. F,S,SS

102. The Earth Through Time, 3 credits. The tracing of changes in the Earth and life through time, with emphasis on the record from North America. Geol 102 may be taken concurrently. F,S

102L. The Earth Through Time Laboratory, 1 credit. Prerequisite or corequisite: Geol 102. An introductory laboratory to complement Geol 102. Field trip included. F,S

103. Introduction to Environmental Issues, 3 credits. Introduction to Environmental Issues. A survey of environmental issues concerning society's interaction with Earth's natural systems and exploitation of Earth's resources. F,S

104. Geology of National Parks, 3 credits. An overview of the geology of U.S. National Parks. Unifying geological principles are emphasized. Major topics: sandstone parks, volcanic parks, hot springs and geothermal areas, caves and limestone parks, reefs and fossilized reefs, rivers and erosion, ice and glaciers, mountain building and mountain ranges. S

105. Selected Topics, 1-4 credits. Repeatable when topics vary. A special topic course intended for non-geology majors. Subjects will include many issues of interest to non-geologists and non-scientists, such as earthquakes, evolution, genes, and the geology of National Parks. On demand.

111. Views of Earth and Planets, 3 credits. An introduction to Earth and the Solar System. Coverage includes: The planets and their moons, comets, asteroids, impact craters, meteors, the sun, the solar system's origin, planetary atmospheres, the living Earth, the question of life elsewhere. F,S

111R. Views of the Earth and Planets Recitation, 1 credit. Corequisite: Geol 111. A recitation-discussion to complement Geol 111. S

203. (Geol/Engr) Geology for Engineers, 3 credits. Corequisites: Geol 203L. Physical geology discussed from the engineering point of view. Required of students in civil engineering and geological engineering. Includes laboratory. F

220. Computer Applications in Geology and Environmental Science, 2 credits. Introduction to the application of computers, software, and digital processing in the geological and environmental sciences. F

302. (Geol/Engr) Reclamation Engineering, 4 credits. Prerequisites: Geol 101 or Geol 201 or consent of adviser. Principles of reclamation emphasizing the need for reclamation: geology and hydrogeology of disturbed landscapes, geological, hydrological, and ecological reclamation objectives; current reclamation practices; reclamation of abandoned mine lands; reclamation design, laws, regulations, permits, bonds, and public perception. Includes laboratory and field trip. S

303. Selected Topics in Geology, 1-4 credits. Prerequisite: Geol 100, 101, 102 or consent of instructor. Each topic is concerned with a special aspect of geology. May be repeated up to a maximum of 8 hours. F,S

311. Geomorphology, 4 credits. Prerequisites: Geol 101 and 102. Dynamics of weathering, mass movement, running water, groundwater, waves, wind and ice in the production of landforms. Includes field trips and laboratory. F

318. Geology, 3 credits. Prerequisites: Geol 101 or Geol 203, and Chem 121 or consent of instructor. Survey of the origin, distribution and uses of rock-forming minerals. Introduction to mineral structures, crystal chemistry, and crystallography. Laboratory identification of common minerals in hand sample and petrographic thin section. Introduction to the use of the polarizing microscope. Includes field trip. S

320. Petrology, 3 credits. Prerequisite: Geol 318. Description, classification and origin of igneous, metamorphic, and sedimentary rocks. Field and laboratory study of rocks. Engineering properties of earth materials. Advanced aspects of optical mineralogy. Includes laboratory. F

321. Geochemistry, 3 credits. Prerequisite: Geol 318, Chem 122 and Math 166, or consent of instructor. Application of the principles of chemistry to geologic and hydrogeologic problems. Origin and distribution of the chemical elements. Introduction to radiochemistry, isotope, chronocronology, and stable-isotope geochemistry. S

322. Environmental Geology, 3 credits. Prerequisite: One introductory geology course or upper division standing. Math 103 recommended. Relationship of geology to society; natural hazards; misuse and repair of our natural environment; application of geology to engineering, land planning, and resource management. S

323. (Geol/Engr) Engineering Geology, 3 credits. Prerequisites: One introductory geology course, Math 165, and upper division standing in geology or engineering. Application of geological and environmental principles to geotechnical engineering design, construction, and operation. On demand, offered alternate years. F,S

330. Structural Geology, 3 credits. Prerequisites: Geol 318, Geol 320, and Math 105. Mechanics of rock deformation, analysis of rock structures, preparation and inter-
380. Digital Mapping Methods. 3 credits. Prerequisites: Junior standing in Geology (12 hours). This course integrates "hands-on" data acquisitions and map generation with an overview of the technology (GPS, lasers, and data management). Field projects focus on mapping methodology and laboratory projects focus on analysis and presentation. It is assumed that students have an undergraduate geology background and a basic knowledge of computer applications.

342. Environmental and Conservation Hydrology. 3 credits. Prerequisites: Introduction to Hydrology or consent of instructor. Topics relating hydrology to the environment and water conservation including the global and local hydrological cycle, flood occurrence and prediction, water erosion, erosion and sedimentation, wetlands, and water management. SC

356. Geoscientists. 1 credit. Students attend and evaluate departmental lectures given by current and former students, faculty, and students. May be repeated once. S-U grading. May not be taken concurrently with Geol 422. FS

397 (GeoG). Cooperative Education. 1-8 credits (repeatable to 24 credits). For qualified students majoring in geological engineering, geology, or environmental geology and technology. A practical work experience with an employer closely associated with the student's academic area. Positions may require student relocation for one or more semesters. Arranged by mutual agreement among student, department, and employer. Special permission required. S-U grading only. FS,SS

399. Petroleum Geology. 3 credits. Prerequisites: Geol 101 or Geol 203, and Geol 102. Origin, accumulation and geologic occurrence of petroleum and gas. FS (odd numbered years).

418. Site Characterization. 3 credits. Prerequisites: Geol 220, 311, 414; Biol 332, 332L. Purposes, techniques, and tools of site investigation. Covers geologic, hydrologic, and ecologic concerns. Hands-on application of principles and techniques at real sites. F

411. Sedimentology and Stratigraphy. 5 credits. Prerequisite: Geol 220. Origin, transportation, deposition, and diagenesis of sediments; principles and applications of stratigraphy. Includes field trip and laboratory. F

414. Applied Geophysics. 5 credits. Prerequisites: Geol 101, Math 265, Phys 212 or 252. Principles of various geophysical methods and their application to geologic problems. S

415. Introduction to Paleontology. 4 credits. Prerequisite: Geol 102. Recommended: Biol 150, 151. The principles of paleontology/paleobiology are presented using fossils to document the evolutionary, stratigraphic, and paleoecologic history of animal and plant life on Earth. Includes field trip and laboratory. F

417 (GeoE/GeoG). Hydrogeology. 3 credits. Prerequisite: Math 212 or consent of instructor. Physical and chemical aspects of groundwater movement, supply, and contamination. F

418 (GeoE/GeoG). Hydrogeological Methods. 2 credits. Corequisite: Geol/GeoE 417. Field and laboratory methods used in hydrogeology; techniques of drilling, well and piezometer installation, determination of aquifer parameters, geophysical exploration, soil classification and analysis, groundwater sampling and analysis. Includes field trip. F

419 (GeoE). Groundwater Monitoring and Remediation. 3 credits. Prerequisites: Math 212, GeoE/GeoGe 417 and a statistics course (Econ 210, Psy 241, Math 321 or 353) or consent of instructor. Statistical methods for groundwater sampling and monitoring network design. Groundwater remediation and design, including strategies that remove contaminants for external treatment and strategies for in-situ contaminant treatm.

420. The Evolving Earth. 3 credits. Prerequisite: Senior standing in Geology. A synthesis of the physical, biological, and chemical changes on Earth through time set within geologic systems and inufing concept. S

421. Seminar I. 1 credit. Prerequisite: Geol 356. Instruction and practice of oral and visual presentation in science and engineering. Includes preparation and delivery of oral presentations and seminar. Includes student presentation and design of seminar paper. Includes field trips. FS

422. Seminar II. 1 credit. Prerequisites: Geol 421, senior or graduate status in departmental major. Continuation of Geol 421 experience. Preparation and delivery of oral presentations in science and engineering, culminating in oral presentation of senior thesis. FS

425 (GeoE). Design Hydrology for Wetlands. 3 credits. Prerequisites: Chem 121 and either CE/ME 306 or GeoE/GeoE 417. Principles of chemistry, geology, hydrodynamics, and hydrology applied to natural and constructed wetlands and other small catchments. F

427 (GeoE/GeoG). Groundwater Modeling. 3 credits. Prerequisites: GeoE/ GeoG 417. Determination of subsurface hydraulic flow using numerical modeling applied to groundwater flow. Short programs using the finite difference method will be written to demonstrate groundwater movement and storage. Simulation of practical groundwater problems will be carried out using the U.S. Geologic Survey’s MODFLOW code. GeoE 427 requires a design oriented project appropriate for students in engineering. Alternatively, students in GeoE 427 will complete a scientific modeling project. Credit may be received for completion of either GeoE 427 or GeoG 427 but not both. F

455 (GeoE). Geomechanics. 4 credits. Prerequisites: GeoE 323 and CeEn 412 or consent of instructor. Principles of geomechanics and its application to geological engineering. Includes laboratory. F

484 (GeoE). Geological Engineering Design. 3 credits. Prerequisites: Advanced level standing in Geological Engineering and consent of adviser. The first of a two- course sequence in geological engineering design. Define the design problem, establish design objectives, evaluate alternatives, specify constraints, determine a methodology, complete a formal design problem statement. FS,SS

485 (GeoE). Geological Engineering Design. 3 credits. Prerequisite: GeoE 484. Corequisite: GeoE 422. Continuation of GeoE 484 taken the preceding semester. Systematic study and design, with determination of feasibility, careful assessment of economic factors, safety, reliability, aesthetics, ethics, and social and environmental impact. Results presented in GeoE 482 Seminar. FS,SS

487. Research I. 1 credit. Prerequisite: Senior standing in departmental major. Identification and proposal of research project. Includes literature review, feasibility review, and formal proposal identification and written proposal. Selection of faculty research adviser within first month of semester. FS

488. Research II. 2 credits. Prerequisite: GeoE 487. Execution of research plan developed in GeoE 487. FS

491. Geologic Proplems. 1-4 credits. Prerequisites. Consent of instructor. May be taken more than one semester to maximum of 8 hours. Individualized or group study on selected geoscience topics. FS,SS

493 (GeoE). Selected Topics on Mining. 1-3 credits (repeatable to maximum of 4 hours). Prerequisite: GeoE 301. Detailed study of a selected topic related to mining planning or operations. Includes laboratory if applicable. On demand.

494. Senior Thesis. 1 credit. Prerequisite or corequisite: GeoE 489. Written results of research conducted in GeoE 489. The thesis document should conform to the format guidelines of a major English-language journal in which the thesis could be published. A copy is to be provided to the F.D. Holland, Jr. Geology Library. FS

History

Berger, Burin, Clingan, Ellis, Ettling, Handy-Marchello, Iseminger, Kelsch, Mochoruk (Chair), Porter, and Reese

The History program at the University prepares students to understand themselves and their society, as well as people in different cultures in the past and in the present. Beyond this, the department prepares students for the teaching of history at all levels, government service, and graduate studies in history. The study of history may serve as pre-professional preparation for other areas such as law or the ministry.

Two options are offered for the History major, and each by itself leads to a B.A. with a major in History. Option A is primarily for those who plan to enter professional schools, such as law, and for those who plan to enter graduate studies. Option B is designed primarily for those who want to enter government service, business, or teaching at the secondary level.

When taken in conjunction with the Teaching and Learning program in Secondary Education (see page 163), Option B satisfies the requirements for teacher certification in the Social Sciences. Prospective teachers should seek an adviser in the College of Education and Human Development in addition to their adviser in the History department.

College of Arts and Sciences

B.A. WITH MAJOR IN HISTORY

Required 125 credits (36 of which must be numbered 300 and above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. One of the following curriculum options.

Option A

36 hours major, including:

9 hours from

Hist 101.....Western Civilization I............................(3)
Hist 102.....Western Civilization II...........................(3)
Hist 103.....United States to 1877............................(3)
Hist 104.....United States since 1877.........................(3)
Hist 240.....The Historian's Craft.................................(3)
Hist 440.....Research...............................................(3)
Electives (16 must be upper level)..................(21)
Required in other departments:
Level IV proficiency in a foreign language.
Option II:
36 major hours, including
Hist 101 Western Civilization I (3)
Hist 102 Western Civilization II (3)
Hist 103 United States to 1877 (3)
Hist 104 United States since 1877 (3)
Hist 240 The Historian's Craft (3)
Hist 440 Research (3)
Electives (18 must be upper level) (18)
Of the 18 elective hours 12 must form a concentration in either World or American History.
Required in other departments:
Anth 171 Introduction to Cultural Anthropology (3)
Econ 105 Elements of Economics (3)
Econ 420 Economic Education (3)
Hist 161 World Regional Geography (3)
Hist 319 Geography for Teachers (2)
Pols 115 American Government I (3)
Pols Electives (3)
Soc 110 Introduction to Sociology (3)

MINOR IN HISTORY
Required 20 credits, at least 6 must be in upper division courses, including 9 hours from:
Hist 101 Western Civilization I (3)
Hist 102 Western Civilization II (3)
Hist 103 United States to 1877 (3)
Hist 104 United States since 1877 (3)
History electives (11)

RELATED FIELD CONCENTRATION IN INTELLEC-TUAL HISTORY, MINOR ONLY:
Required: 20 credits Upper Level work approved by the chairs of the History or Philosophy Departments.

Courses
101. Western Civilization I. 3 credits. An interpretive survey of Western Civilization from earliest times to the close of the European Middle Ages. F, S
102. Western Civilization II. 3 credits. A comprehensive survey of Western Civilization from the Renaissance to the present, with emphasis on movements and institutions common to Western Europe and their influence on the rest of the world. F, S
103. United States to 1877. 3 credits. A survey of early American history, including old world background, transformation of British institutions into American institutions, revolution, and the establishment of the Union with its temporary breakup in Civil War. F, S
104. United States since 1877. 3 credits. A survey of the history of the United States since Reconstruction, including the transformation of an isolationist, agrarian nation into an urban industrial and world power with attention to the resulting domestic social, economic and political changes. F, S
106. Middle Eastern Civilization From Islam to Present Times. 3 credits. A survey history of the civilizations of the Eastern Mediterranean since the rise of Islam to the time of the formation of the present nation states. S
204. Canada to 1867. 3 credits. A survey of pre-Confederation Canadian history from the pre-Columbian to 1867. Special attention will be paid to the social, economic, and political factors in Canada and North America which shaped Canada’s colonial history occurring since the Civil War. F
205. Canada Since 1867. 3 credits. A survey of Canadian history from Confederation to the present. Beginning with an overview of pre-Confederation Canada, this course will focus upon the cultural, economic, and political factors that have shaped Canada in the modern era. S
210. United States Military History. 3 credits. A survey from colonial times to the present. The role of the Army in the formulation and implementation of national defense. Attention is given to the Constitutional and legal status of the Army, changing concepts in military organization and training, public attitudes toward the military, and the influence of the Army on American society. Specific wars and battles are studied in terms of military tactics and strategy. F
220. History of North Dakota. 3 credits. A survey emphasizing settlement and development, noting the consequences of the state’s location, climate, and settlers on the situation in which it now finds itself. Special attention is paid to the Nonpartisan League story and the evolution of isolationist sentiment among North Dakotans. Recommended for Social Science major certification. F, S
221. The Scandinavian Countries Since 1500. 3 credits. A survey of Denmark, Norway, Sweden, Finland, and Iceland from the Lutheran Reformation to the welfare state. S
240. The Historian’s Craft. 3 credits. An introduction to research and writing history. Students will learn critical reading of secondary sources, how to draw and evaluate resources, how to analyze evidence, how to apply the style and form of historical writing, and how to utilize methods of research. Students will also study historiography and types of historical writing and practice. F, S
269. World War II. 3 credits. A brief survey of the background, strategy and major campaigns of World War II including some of the diplomatic and political problems encountered by the major belligerents. The course includes extensive use of documentary film. S
300. Topics in History. 1 credit. Repeatable to 6. Topics in history which allow the student to study a specialized subject. 4 credits may apply to the history minor; 6 credits to the history major. F, S
301. Medieval Civilization. 3 credits. A survey of the development of Europe from the late Roman Empire to the Renaissance. Emphasis is on political and intellectual developments. S
325. The American West to 1890. 3 credits. An examination of major issues in the American West beginning with the trans-Appalachian West and proceeding to the trans-Mississippi West. The course will examine social, political, military, and economic developments in the context of the Western environment. F
326. The American West since 1890. 3 credits. An examination of the major issues in the trans-Mississippi West during the twentieth century. This course will examine social, political and economic developments in the context of the western environment. S
330. The United States: Social and Cultural, 19th Century. 3 credits. A survey of the contributions of social institutions (such as the family, school, and church) to the development of a national culture. The colonial background is considered briefly, but emphasis is given to the first half of the nineteenth century. Changing attitudes toward social reform, intellectualism, class status, and minorities (such as children, women, blacks, and Indians) are examined. Competing regional trends in economics, social, political, and intellectual attitudes and institutions provide the dynamics for understanding the failure of nationalism during the antebellum period. F
352. Women in American History to 1865. 3 credits. A survey of U.S. women’s history from the fifteenth century to 1865. The course will examine historical events and their significance for women of diverse cultures and classes. F
353. Women in American History Since 1865. 3 credits. A study of the history of American women after the adoption of the Thirteenth Amendment to the Constitution. The course will examine historical events and their significance for women of diverse cultures and classes. S
355. Nuclear Weapons and the Modern Age. 3 credits. An introduction to the history of nuclear weapons and their delivery systems, their development and use during World War II, the nuclear arms race between the U.S. and the U.S.S.R., popular disarmament movements, and diplomatic efforts to control nuclear weapons and their proliferation. A final section will deal with the nuclear implications of the end of the Cold War and the development of new nuclear states in the last years of the 20th century. The course will include—from an historian’s point of view—some technical material necessary to a reasonable and realistic understanding of the subject. F
359. The United States and Vietnam, 1945-1975. 3 credits. An exploration of Southeast Asian as well as American history. This course will survey briefly the development of Vietnamese culture and nationalism, the history of French imperialism in Indochina as background to an examination of the development of the Vietnamese independence movement, the origins of Vietnamese communism, the war for independence from France, and the violent and tragic relationship between the U.S. and Vietnam from the end of World War II to the final departure of American forces from Saigon. S
363. Ancient Greece. 3 credits. A study of Greek prehistory and history to the end of the Hellenistic era. Greek achievements in art, commerce, literature, politics, religion, science, and technology are surveyed. F
363A. Ancient Rome. 3 credits. A survey of the prehistoric, historical development, and ultimate decline in Rome. In addition to inquiries into the military, political, cultural, economic, and religious experiences of the ancient Romans, this course will attempt to delineate those qualities of life that were peculiarly Roman. S
364. The Ancient Near East. 3 credits. A course intended to acquaint the student with cultures of the ancient Near East and the Levant. The Levant are the areas emphasized. S
365. Europe: The Reformation, 1510-1648. 3 credits. The flow of events and ideas in Europe from the beginning of the Reformation to the end of the religious wars. F
366. Europe: Age of Absolutism, 1648-1789. 3 credits. The flow of events and ideas in Europe from the end of the Thirty Years’ War to the French Revolution. S
367. Europe: French Revolution and Napoleon Era, 1789-1815. 3 credits. An engaging course that serves as an admirable introduction to the study of European history as viewed from the point of view in which it has its historical origins and the contexts of the European experience. Emphasis is placed on the causes, the course, and the consequences of the French Revolution. The course will also explore the politics and culture of the Napoleonic era. F

once begun, whether they move under their own momentum from moderation to ex-
cess for examination. S/2

353. Europe: 1815-1918. 3 credits. A study of such movements as industrial-
ism, socialism, nationalism, and imperialism, developing the theme that those who sought
to change behavior, institutions, frontiers, or governments from 1815 to 1848 employed
idealistic and impractical means. After the 1848 revolutions that swept over Europe, a
new “toughness of mind” emerged and those seeking to effect change became more
practical and pragmatic, as manifested, for example, in Marxism and Realpolitik. F/2

355. Europe Since 1918. 3 credits. A survey of European history from 1914 to
the present. A study of the origins of the issues, associations, and problems confronting Euro-
peans after the Great War of 1914-1918, a war that was fought “to make the world safe
for democracy,” but which was an event that signified “the end of the European Age,”
a period during which Europeans and their institutions had exerted a dominant influ-
ence around the world. S/2

362. Modern China. 3 credits. A survey of the political, economic, social,
and intellectual history of China from the Opium War (1842) until the present. Special at-
tention will be paid to the problems of modernization in traditional societies and to the
interaction of fundamental social revolution.

370. African-American History to 1877. 3 credits. This course begins with an
examination of how and why the idea of race first developed; it then surveys colonial
slavery, the impact of the American Revolution on race relations, and the slave commu-
nity during the antebellum period. We also consider the lives of free blacks in the North
and South as well as the similarities and differences between U.S. and Latin American
slave. The course concludes with a detailed look at Reconstruction, this nation’s ex-
perience with internal race relations. Through lecture, discussion, projects, and, writing
assignments, History 370 highlights both the tribulations and triumphs of African Ameri-
cans. S/2

371. African-American History Since 1877. 3 credits. This course begins with
a brief overview of Reconstruction, it then examines Populism, the entrenchment of
Jim Crow segregation, and the philosophies of Booker T. Washington and W.E.B. DuBois. We
also explore the impact of World War I on African Americans, as well as the Great
Migration, the Harlem Renaissance, and the Great Depression/War World II era. Sev-
eral weeks are devoted to the Civil Rights and Black Power Movements, and the course
concludes with an examination of contemporary race relations. A mixture of lectures,
discussion, projects, and, writing assignments. History 371 emphasizes both the trials and
triumphs of African Americans since 1877, and endeavors to discover (and culti-
uate) the forces which promote racial equality and social justice. S

380. Modern Africa. 3 credits. This course will survey Africa’s history from the
earliest times to the present. The majority of the class will focus upon the period from
1500 to the present and will explore how both internal and external forces shaped Africa’s
history, especially in the 19th and 20th centuries. We will attempt to discover (and culti-
uate) the forces which promote racial equality and social justice. 

397. Cooperative Education. 3 credits. May be repeated to a maximum of 9
credits. A practical work experience with an employer closely associated with the student’s
academic area. 3 credits repeatable to 9. Arranged by mutual agreement among stu-
dent, department, and employer. S/U grading only. F, S, SS

399. Selected Topics in History, 2-3 credits. Selected topics in history which
allow the student to study a specialized subject. Credits may apply to history major
or minor. F/S

403. The United States: The Colonial Period. 3 credits. A survey of the back-
ground of British colonization, the development of diverse colonial cultures, and the
transformation in maturing provincial societies of the European heritage. The seven-
teenth-century Age of Faith and the eighteenth-century Age of Reason are contrasted to
illustrate the changing attitudes of Americans toward themselves and Britain. The un-
derslying theme is the cause of the American Revolution, with emphasis upon the incom-
pleteness of American and British constitutional and ideological views. American tech-
niques of propaganda and resistance are analyzed; military history is deemphasized.
The results of independence are discussed in terms of the changing attitudes reflected
in the Declaration of Independence, the Articles of Confederation, and the Constitution. S

405. The United States: Age of Jefferson and Jackson, 1789-1850. 3 credits.
A study of the creation of a new, expansive nationalism in the development of new
institutions and new national culture, and the simultaneous growth of sectional forces
which would lead to war. F

406. The United States: Civil War and Reconstruction, 1860-1877. 3 credits.
A study of the acceleration of the forces of sectionalism and racism that caused the
temporary breakdown of the American democratic process and the tragedy of Civil War
and Reconstruction. S/2

407. The United States: Rise of Industrial America, 1877-1917. 3 credits. A
survey of the rise of America to industrial and world power. Emphasis is placed upon
the great changes which the Industrial Revolution brought and the American response
to these changes. Development is given to the Populist and Progressive move-
ments. F/2

408. The United States, 1920-1945. 3 credits. A study of American society
from the end of World War I through World War II. Emphasis will be placed upon the Repub-
lican ascendancy and social changes during the 1920s, the causes of the Great Depres-
sion, the New Deal, the rise to World War II, and the war, especially the homefront. F/2

412. U.S., Foreign Relations Since 1900. 3 credits. An advanced survey of the
major policies advocated and pursued by the U.S. during the 20th century. S/2

413. The United States Since 1945. 3 credits. An advanced examination of the
United States as it has developed from the height of its power, influence, and prosperity
through years of upheaval, cultural and political transformation, and economic decline.
F/2

414. France Since 1815. 3 credits. A survey of French history from Napoleon to
Chirac focusing on the polarization that led to France’s collapse in 1940 and how that
split was healed. F

415. Germany Since 1815. 3 credits. A survey of German history from Kant to
Kohl focusing on the social and religious divisions in Germany that led to the catastro-
phe of the Nazi regime. S

416. Russia to 1855. 3 credits. A survey of Russia’s political, economic, and
social development before the beginning of modern reforms and the growth of revo-
lutionary ideas.

417. Russia Since 1855. 3 credits. A survey of Russia’s political, economic,
social, and cultural development from the great Reforms of Alexander II until the present
— including the collapse of the Russian Empire, the rise and fall of the Soviet Union,
and the rebirth of Russia. This course has two main themes: it considers the relation of
Russian civilization to the West, and it examines the problems of “modernization” of
traditional societies.

419. Great Britain Since 1815. 3 credits. A survey of British history since 1815
with an emphasis on the state of mind of being known as “Victorian,” as it was man-
fested, practiced, or criticized in the nineteenth century. its influence on economics,
politics, foreign affairs, and social policy, and its vestiges in modern-day Britain. F/2

421. The British Empire, 1496-1884. 3 credits. A survey of a British Imperial
history from the Tudors to the “Scramble for Africa.” Particular attention will be paid to
the social, economic, and political factors which shaped Britain’s Imperial history as
well as the history of its colonies. S/2

422. The British Empire and Commonwealth, 1884-present. 3 credits. A
survey of British Imperial history from the “Scramble for Africa” to the present. Begin-
ing with an overview of the early Empire, this course will focus upon the cultural,
economic, and political factors which shaped and led to the deconstruction of the Em-
pire/Commonwealth in the modern era. S

424. American Family in Historical Perspective. 3 credits. This course is de-
vised as a survey of the family over the nation’s first 400 years of existence. Course
members will examine variations in the structure of the family, changes in the definition
of the family and the forces which have wrought significant alterations in this most
basic of social institutions, taking into consideration race, culture, and gender. S

431. Seminar in the History of the Great Plains. 3 credits. This course pro-
motes focused study of the Great Plains of North America through reading, discussion,
research, and writing. Students will examine all aspects of Great Plains history includ-
ing culture, environment, social organization, economics, and politics from the ancient
past to the present. S/2

440. Research. 3 credits. In this course, students will design and conduct a ma-
jor research project. Students will work with a faculty who will guide their research.
Students will write a paper and present their research orally. F, S

446. The Atlantic World. 3 credits. This is a comparative world history course
that focuses upon the cultural, economic, social, political, ideological and religious in-
teraction, competition, conflict and change between Western Europe, West Africa and
the Americas. The course will begin in the 1400s by examining the foundations of
European expansion and end with the revolutions of the Americas and Europe in the
late 18th and early 19th centuries. A major focus of the class will be cultural interaction,
the slave trade and the foundations of the modern world system. F/2

470. United States-Canadian Relations, 1776 to the Present. 3 credits. This
course explores the historical relationships linking and dividing Canada and the United
States of America since 1774. Because of the unique constitutional and diplomatic sta-
tus of British North America and then Canada in this relationship, this course examines
in complex tri-partite relationship between the U.S., Canada, and Great Britain. F/2

481. Public History Practice. 3 credits. A practicum in which the student learns
to experience the techniques of public history work. S/2

494. Senior Honors Theses. 1-15 credits; total not to exceed fifteen. Prerequi-
site: consent of the Department and approval of the Honors Committee. Supervised
independent study culminating in a thesis. F, S

494. Readings in History. 1-3 credits. Repeatable to 6. F, S

Honors
(Hon)
J. Anderegg, Program Coordinator

For a full description of the Honors Program see the University Information section.

Graduation as a Scholar in the Honors Program

Required 125 credits (36 of which must be numbered 300 or
above and 60 of which must be from a 4-year institution), including
24 credits of Honors coursework:
I. The Honors Program Requirements substitute for the University General Education Requirements.

II. The Honors Program English Composition Requirement.

One of the following courses (Honors sections preferred):

   Eng 120 Composition II .................................................... (3)
   Eng 125 Technical and Business Writing ................................ (3)
   Eng 308 Advanced Composition I ........................................... (3)
   Eng 408 Advanced Composition II ........................................... (3)

III. Honors coursework from:

   Hon 101 Inquiry in the Humanities ........................................... (3)
   Hon 102 Inquiry in the Social Sciences ..................................... (3)
   Hon 103 Inquiry in the Sciences ............................................. (3)
   Hon 290 Sophomore Honors Essay .......................................... (1)
   Hon 291 Colloquium in the Humanities ..................................... (1-4)
   Hon 292 Colloquium in the Social Sciences ................................ (1-4)
   Hon 293 Colloquium in the Sciences ......................................... (1-4)
   Hon 301 Honors Mode ............................................................. (3)
   Hon 391 Advanced Colloquium in the Humanities ....................... (1-4)
   Hon 392 Advanced Colloquium in the Social Sciences ................ (1-4)
   Hon 393 Advanced Colloquium in the Sciences ......................... (1-4)
   Hon 399 Independent Study .................................................... (1-4)
   Hon 489 Senior Honors Thesis ................................................. (1-9)

Eight of these 24 credits must be taken in colloquia. Honors sections of courses offered by other departments may also count for a portion of the 24 credits.

IV. Sophomore Honors Portfolio, submitted upon completion of 9 Honors credits.

V. Senior Honors Thesis.

Courses

101. Introduction to Humanities I. 4 credits. While this course has the same structure and goals as Humanities 101, its subject matter is the writing of classical Greece. The authors read usually include Homer, Aeschylus, Sophocles, and Plato. S

102. Introduction to Humanities II. 4 credits. While this course has the same structure and goals as Humanities 101, its subject matter is the writing of classical Greece. The authors read usually include Homer, Aeschylus, Sophocles, and Plato. S

224. Integrated Social Science Inquiry. 2-4 credits. Readings and discussion of selected works that reflect the methodology and concerns of the social sciences; integration of social science topics and methods with other Integrated Studies course/topics. F, S

225. Advanced Integrated Social Science. 2-4 credits. A continued, in-depth exploration of social science topics raised in Humanities 224. Integrated Social Science Inquiry. Course will require that students pursue more advanced research in and consideration of topics included in the social sciences as they relate to the Integrated Studies Program theme. F

270. Integrated Studies Life Sciences. 3 credits. An exploration of historical and modern developments in evolution and genetics that have altered our conception of what it means to be human. This course examines the philosophical, psychological, and sociological implications of contemporary neo-Darwinian theory. No laboratory. Enrollment limited to Integrated Studies students. F, S

271. Integrated Studies General Science. 4 credits. An exploration of the nature of science, with the aim of discovering how scientists employ powerful empirical methodologies in order to construct a body of cumulative knowledge that represents a fairly accurate, although always tentative, approximation of external reality. This course examines the inextricable conceptual connections which link and unify seemingly disparate sciences. Laboratory three hours each week where students design and implement experiments. Enrollment limited to Integrated Studies students. F, S

391. Advanced Humanities Seminar. 1-4 credits. An interdisciplinary reading, writing, and discussion course whose focus varies from semester to semester, but which draws on texts from the Humanities, Social Sciences, and Sciences. F, SS

Indian Studies

(Hum)

Barrente, Carmichael (Coordinator), LaPierre and Rand

The mission of the Humanities Program is to provide courses which meet the general education Arts and Humanities requirement. Emphasis is placed on small group discussion, critical reading of classical and modern texts, and written responses to the materials of the course.

The Humanities Program also administers the Integrated Studies Program, which is an interdisciplinary multi-course general education program for first year students. See the Integrated Studies Program listing for more information.

Courses

101. Introduction to Humanities I. 4 credits. A continued, in-depth exploration of social science topics raised in Humanities 224. Integrated Social Science Inquiry. Course will require that students pursue more advanced research in and consideration of topics included in the social sciences as they relate to the Integrated Studies Program theme. F

270. Integrated Studies Life Sciences. 3 credits. An exploration of historical and modern developments in evolution and genetics that have altered our conception of what it means to be human. This course examines the philosophical, psychological, and sociological implications of contemporary neo-Darwinian thought. No laboratory. Enrollment limited to Integrated Studies students. F, S

271. Integrated Studies General Science. 4 credits. An exploration of the nature of science, with the aim of discovering how scientists employ powerful empirical methodologies in order to construct a body of cumulative knowledge that represents a fairly accurate, although always tentative, approximation of external reality. This course examines the inextricable conceptual connections which link and unify seemingly disparate sciences. Laboratory three hours each week where students design and implement experiments. Enrollment limited to Integrated Studies students. F, S

391. Advanced Humanities Seminar. 1-4 credits. An interdisciplinary reading, writing, and discussion course whose focus varies from semester to semester, but which draws on texts from the Humanities, Social Sciences, and Sciences. F, SS

Indian Studies

(IS)

Hans (Chair), Gagnon and Gilley

The Indian Studies curriculum at the University of North Dakota has been established to meet needs both on the campus and throughout the state. The major and minor, combined with other subject matter concentrations, are intended to provide: (1) a more complete understanding of Indian history and culture, (2) practical experiences in Indian communities, (3) a basis for employment in either reservation or non-reservation settings, and (4) background for graduate work in Indian Studies. The degree of Bachelor of Arts is offered through the College of Arts and Sciences. For the greater University community, the courses in Indian Studies, together with the research conducted or sponsored by the Department, provide an expanded approach to the study of American history. Another purpose of the program is to enable the University to serve the reservation communities, especially in their educational and human service
programs. As the Indian Studies program develops, more basic information, teaching materials, technical data, and staff assistance will be available to Indian schools, programs, and Indian leaders.

College of Arts and Sciences

B.A. WITH MAJOR IN INDIAN STUDIES

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. The Following Curriculum:

36 major hours, including:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>IS 121</td>
<td>Introduction to Indian Studies</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 240</td>
<td>Research and Writing in Indian Studies</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 370</td>
<td>North American Indians</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 375</td>
<td>History of Federal Indian Law and Policy</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 440</td>
<td>Senior Colloquium</td>
<td>(3)</td>
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</tbody>
</table>

6 hours from Arts, Literature and Language:

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Engl 161</td>
<td>American Indian Languages I</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 162</td>
<td>American Indian Languages II</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 265</td>
<td>American Indian Literature</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 369</td>
<td>Literature and Culture: Traditional</td>
<td>(3)</td>
</tr>
<tr>
<td>Amst. Indian Lit.</td>
<td></td>
<td>(3)</td>
</tr>
<tr>
<td>IS 255</td>
<td>Survey of Native American Arts</td>
<td>(3)</td>
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</table>

3 hours from History:

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS 201</td>
<td>History of the Sioux</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 203</td>
<td>History of the Chippewa</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 207</td>
<td>History of the Three Affiliated Tribes</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 331</td>
<td>Traditional Plains Indian Culture</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 332</td>
<td>American Indian Philosophical Thought</td>
<td>(3)</td>
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</table>

6 hours from Contemporary Social Issues:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS 330</td>
<td>Contemporary Plains Indian Culture</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 345</td>
<td>Contemporary American Indian Issues</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 346</td>
<td>Contemporary Indian Women</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 363</td>
<td>Native American Child Development</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 371</td>
<td>Reservation Government and Politics</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Electives (6)

Any of the courses listed above that are not used to meet requirements may be taken as electives. Other electives in Indian Studies include IS 151, 379, 492 and 494.

A concentration in an area or field other than Indian Studies is also required of all majors. This concentration may be met in the following ways:

(1) Proficiency in a language (equivalent to Level IV in a Native American or other language)

(2) A minor in another subject matter field

(3) In special instances, a supplementary concentration of at least 24 hours can be arranged between the student and the faculty of the Department. These concentrations are designed for students to obtain coursework in areas which complement the major

(4) Preparation for teaching in the public schools. (It should be noted that at present Indian Studies is not a certifiable major. Thus, one must complete the requirements for a composite Social Science or another certifiable teaching major, as well as take the professional education foundations courses required of teacher candidates. Courses in Indian Studies may serve as an area of concentration in the Social Science major.)

MINOR IN INDIAN STUDIES

Required 22 credits including:

<table>
<thead>
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<td>(3)</td>
</tr>
<tr>
<td>IS 440</td>
<td>Senior Colloquium</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Courses

121. Introduction to Indian Studies. 3 credits. Introduction to content, concepts and methods of Indian Studies courses, with emphasis on a survey of subject matter designed to provide a foundation for further study. F

151. White Images of Native Americans. 3 credits. European settlers had firm notions of what tribal peoples on the American continent were like before even leaving Europe. This course will show how these stereotypes and ethnocentrism were perpetuated in various genres and fields, e.g., captivity tales, fiction, historical accounts, sociol-

ogy, etc. Finally, students will analyze some recent examples of these stereotypes and ethnocentrism in print and film. Every two years.

201. History of the Sioux. 3 credits. The history of the Sioux from their earliest known beginnings to the present day, with special emphasis on the Lakota division. F

203. History of the Chipewa. 3 credits. A study of Ojibway history, life, and culture from the original contacts with White traders, successive relocations in the interior of North America; warfare and contact with other tribes; treaties and land cessions and establishment upon reservations; and contemporary status and problems. F

207. History of the Three Affiliated Tribes. 3 credits. A survey of the history of the Mandan, Hidatsa, and Arikara people. The first part of the course deals with the history of the separate tribes, and the second part is concerned with their corporate history since 1862. S

240. Research and Writing in Indian Studies. 3 credits. The course will introduce students to professional writing in Indian Studies. The final goal is for students to turn out a 20-25 page research paper in an area of interest to them. S

255. Survey of Native American Art. 3 credits. Examination of the methods, materials, and techniques of Native American visual arts, music, dance, and drama. F

330. Contemporary Plains Indian Culture. 3 credits. An examination of the ecology, social structure, economies, politics, and values of contemporary Plains Indians with special emphasis on reservation systems. F

331. Traditional Plains Indian Culture. 3 credits. An examination of the environment, social structure, political organization, religion and other aspects of Plains Indian life before the establishment of the reservations. F

343. Contemporary American Indian Issues. 3 credits. Study and discussion of issues of general importance to contemporary Native American life. F

346. Contemporary Indian Women. 3 credits. An examination of the historical and contemporary traditions, roles, contributions, and issues concerning Indian women.

352. Native American Philosophical Thought. 3 credits. Instruction in the complex and rich "religions" of Native American tribes as well as to the Church of Native Americans and the Native American Religious Freedom Act. Both traditional and contemporary belief systems and their importance are discussed. F

363. Native American Child Development. 3 credits. Examines the physical, mental and social development of Native American children from birth to puberty. Differences between traditional tribal ways and modern concerns are related to historical and cultural factors. F

370. North American Indians. 3 credits. Origins and nature of cultures in America north of Mexico. Study basic culture areas and representative groups, culminating with a view of the status and prospects of the modern Indian and Eskimo in Canada and the United States. F

371. Reservation Government and Politics. 3 credits. To acquaint students with functions of various government agencies and the policies of Indian reservation self-government. F

375. History of Federal Indian Law and Policy. 3 credits. A detailed discussion of Federal Indian law and policy from their colonial antecedents into contemporary times. Among other dimensions, an examination of motives, court decisions, statutes, executive orders and proclamations, and their consequences. F

379. Special Topics. 1-3 credits (Repeatable when topics vary). Topics and credits will vary with availability of staff, and with student interests. F

400. Senior Colloquium. 3 credits. Students will integrate the knowledge gained in other courses by reading and discussing selected, inter-disciplinary and theoretically based texts in Indian history and culture. S

492. Directed Readings in Indian Studies. 1-3 credits (Repeatable when topics vary). Topics and credits will vary with availability of staff, and with student interests. S

493. Independent Study in Indian Studies. 1-3 credits. Maximum 9 credits. Consent of Instructor required. F,S,SS

Industrial Technology (IT)

Diez (Chair), Holten, Huang and Kenney

The Department of Industrial Technology has a program accredited by the National Association of Industrial Technology (NAIT) and offers three four-year undergraduate Bachelor of Science (B.S.) degree programs and a graduate program leading to the Master of Science degree (thesis and non-thesis options). The undergraduate degree programs offered through the College of Business and Public Administration are Bachelor of Science in Industrial Technology (BSIT) Industrial Management, Bachelor of Science in Industrial Technology (BSIT) with Teacher Certification, and Bachelor of Science in Occupational Safety and Environmental Health (BSOSEH). Minors in Industrial Technology are an integral part of department offerings.
College of Business and Public Administration

B.S. INDUSTRIAL TECHNOLOGY (IT)

DEGREE PROGRAM

Industrial Technology is a field of study designed to prepare technical-management-oriented professionals for employment in business, industry, and government. The curriculum is organized into three integrated technological systems areas: Electronics and Computer Hardware, Graphic Communication, and Manufacturing.

Required: 125 credit hours, and including:

1. General Education Requirements, see University GER listing.
2. The College of Business and Public Administration GPA Graduation Requirement (2.50), see College section.
3. Industrial Technology Major Program Requirements: At least a 2.50 GPA in courses that apply toward the degree and major, and the following:
   A. Technical Foundation Requirements (17 Credit Hours Required)
      IT 110. Principles of Industrial Technology (2)
      IT 122. Computer Aided Design/Drafting (3)
      IT 201. Electromechanical Fundamentals (3)
      IT 202. Technical Drawing (3)
      IT 203. Production Processes: Manufacturing (3)
      IT 212. Principles of Graphic Design and Print Production (3)
   B. Management Foundation Requirements (21 Credit Hours Required)
      IT 300. Technology and Society (3)
      IT 332. 3D Design (3)
      IT 340. Cost Estimating (3)
      IT 352. Facilities Design (3)
      IT 353. Manufacturing Strategies (3)
      OSEH 440. Industrial Safety (3)
   C. Minor in Technology Education (18 Credit Hours)
      IT 211. Electric Circuits and Devices (3)
      IT 212. Principles of Graphic Design and Layout (3)
      IT 213. Production Processes: Construction (3)
      IT 223. Applied Synthetics (3)
      IT 224. Digital Integrated Circuits (3)
      IT 300. Technology and Society (3)
      IT 301. Microelectronic Circuits (3)
      IT 311. Microcomputer Fundamentals (3)
      IT 312. Fundamentals of Photography (3)
      IT 313. Multimedia Production (3)
      IT 332. 3D Design (3)
      IT 341. Digital Integrated Circuits (3)
      IT 342. Desktop Publishing (3)
      IT 350. Cost Estimating (3)
      IT 412. Design/Drafting (3)
      IT 420. Facilities Design (3)
      IT 433. Manufacturing Strategies (3)
      OSEH 440. Industrial Safety (3)

IV. Selected Electives for Industrial Technology Majors (18 Credit Hours)

Emphasis may be chosen from the following Technology Systems Areas, however, a minimum of one course having each of the third digit 1, 2, and 3 must be included:

Electronics and Computer Hardware Technology Systems:
   IT 211. Electric Circuits and Devices (3)
   IT 212. Principles of Graphic Design and Layout (3)
   IT 223. Applied Synthetics (3)
   IT 311. Microcomputer Fundamentals (3)
   IT 312. Fundamentals of Photography (3)
   IT 313. Multimedia Production (3)
   IT 332. 3D Design (3)
   IT 334. Digital Integrated Circuits (3)
   IT 412. Design/Drafting (3)
   IT 433. Manufacturing Strategies (3)

V. INDUSTRIAL MANAGEMENT

Students preparing for a career in industry will complete the following coursework in addition to the BIST coursework listed under I, II, III, and IV above:

Required Support Courses: Select from the following or higher level (39 hours minimum):

ISES 217. Fundamentals of Management Information Sys. (4)
Math 105. Technical Math (2)
Math 107. Technical Math (2)
Math 146/165. Applied Calc/Calc I (3-4)
Chem 121/121L. General Chemistry I (4)
Physics 162/162L. Introduction to College Physics (4)
Econ 210. Intro to Bus & Econ Statistics (3)
Mgmt 301. Principles of Management (3)
Mgmt 302. Human Resources Management (3)

And either
Mkt 305. Marketing Foundations (3)

Phil 370. Ethics in Engineering and Science (3)

Seminars are encouraged to apply for the Certified Industrial Technician (CIT) offered by the National Association of Industrial Technology (NAIT). Those in Manufacturing and Electronic Technology Systems are required to take the Certified Manufacturing Technology (Cmtt) examination, conducted by the Society of Manufacturing Engineers (SME) or the Certified Quality Technician examination, conducted by American Society of Quality Control (ASQ).

VI. TEACHER CERTIFICATION

Students preparing for a career in technology teacher education will complete the following coursework in addition to the BIST coursework listed in I, II, and IV above:

Technology Teacher Certification Major Program Requirements: At least a 2.75 GPA in courses that apply toward the major, and the following:

A. Technical Foundation Requirements (17 Credit Hours Required)
   IT 110. Principles of Industrial Technology (2)
   IT 122. Computer Aided Design/Drafting (3)
   IT 201. Electromechanical Fundamentals (3)
   IT 202. Technical Drawing (3)
   IT 203. Production Processes: Manufacturing (3)
   IT 212. Principles of Graphic Design and Print Production (3)

B. Teacher Certification Foundation Requirements (21 Credit Hours Required)
   IT 300. Technology and Society (3)
   IT 350. Cost Estimating (3)
   IT 352. Facilities Design (3)
   IT 353. Manufacturing Strategies (3)
   OSEH 440. Industrial Safety (3)

Four courses (12 credits) to be selected from the Technology Education online program at Valley City State University. Courses selected in consultation with an adviser and dependent on Certification Track: Elementary, Middle School or Secondary.

124. Industrial Safety (3)
148. Senior Capstone (3)

The teacher certification program offers students an opportunity to major in Industrial Technology and to complete the Secondary Education program of the Department of Teaching and Learning see the Teaching and Learning Section. Successful completion of the requirements of both programs qualifies the student for teacher certification in Technology Education. Successful completion of the BIST Selected Electives section IV requirements must include the following:

Secondary Teacher Certification Requirements

29 credits minimum, see Teaching and Learning section. Formal admission to Teacher Education is required and is normally sought while enrolled in T&L 325 and requires a minimum of 2.50 GPA. To be accepted for student teaching, a student must have a 2.75 in the major field of study and a 2.75 GPA in all coursework attempted prior to applying for student teaching. Industrial Technology majors seeking teacher certification must have an adviser from the Department of Industrial Technology and the Department of Teaching and Learning.

MINORS IN INDUSTRIAL TECHNOLOGY:

Energy and Computer Hardware, Graphic Communication, Manufacturing

Twenty-three (23) credits to be selected as follows:

Eight (8) credits from the Required Core:

IT Core for Each Minor in Industrial Technology

IT 110. Principles of Industrial Technology (2)
IT 122. CAD (3)
IT 300. Technology and Society (3)

15 credits to be selected from one of the following Technology Systems Areas:

Electronics and Computer Hardware: 15 credits to be selected from course work ending in 1, i.e., IT 201, 211, etc.

Graphic Communication: 15 credits to be selected from course work ending in 2, i.e., IT 211, etc.

Manufacturing: 15 credits to be selected from course work ending in 3, 4, or 5, i.e., IT 300, 340, etc.

MINOR IN TECHNOLOGY EDUCATION

The students who pursue the Minor in Technology Education must complete:

IT 122. CAD
IT 400. Teaching Technology Education

AND the following 200 level IT courses:

IT 201. IT 203. IT 204. IT 212. IT 213. IT 223.
The following IT courses may be taken in addition: IT 202. IT 211.
Courses

110. Principles of Industrial Technology. 3 credits. The study of the philosophy and objectives of Industrial Technology with emphasis on the theories, principles, and objectives of technological systems in business, industry, and educational institutions. F

122. Computer Aided Design/Drafting. 3 credits. This course introduces the student to the computer aided design/drafting with AutoCAD. It is a combination of lecture, hands-on exercises and drawing problems used in industry and business. F

201. Electromechanical Fundamentals. 3 credits. Prerequisites: Math 103; Corequisite: Phys 101. The study of fundamental mechanical, hydraulic, pneumatic, and electrical apparatus used in power systems. F

212. Technical Drawing. 3 credits. Prerequisite: IT 122. The study of technical drawing techniques to include various projections, pictorials, dimensioning, developments and tolerancing used in business and industry. Students will apply computer aided drafting (AutoCAD) in completing technical drawings. S

203. Production Processes: Manufacturing. 3 credits. Prerequisite: IT 110. Fundamental concepts of industrial materials, especially those utilized in manufacturing products, with emphasis on tools and techniques. S

204. Industrial Materials. 3 credits. The study of the characteristics, structure, properties and properties of base of various organic and inorganic materials for industrial conversion processing; to include wood, metals, ceramics, polymers, and ceramics laboratory activities. F

211. Electric Circuits and Devices. 3 credits. Prerequisites: IT 201 and Math 103 and 105. Concepts, principles, and operational characteristics of electric components and devices. S

212. Principles of Graphic Design and Print Production. 3 credits. Basic concepts, processes, and techniques involved in design image generation and image reproduction for the graphic arts. F

223. Production Processes: Construction. 3 credits. Prerequisite: IT 110 or 204 or consent of instructor. A study of material processing methods and techniques utilizing tools and machines leading to the production of constructed assemblies. F, S

223. Applied Synthetics. 3 credits. Prerequisite: Chem 135/135L or 121/121L. A study of synthetic/polymer materials emphasizing identification of characteristics and properties and their application as related to industrial products. S

200. Technology and Society. 3 credits. A lecture-recitation course emphasizing the various impacts of technology on the individual, society, environment and basic institutional life. Subject matter to be covered includes, but not limited to, computer applications, robotics, energy and power projects, photography, field trips, and problem solving. The course concludes with a technology fair at a local school. F

301. Microelectronic Circuits. 3 credits. Study of electronic components and circuits (discrete and integrated) and their functional and operational characteristics. F

302. Web Page Design. 3 credits. Introduction to electronic publishing on the Internet through design, layout and production of web pages. Emphasis on production of graphics, image maps and navigational text. S

311. PC Hardware. 3 credits. Prerequisite: IT 211 or consent of instructor. An introductory course to personal computer hardware. Includes an understanding of: the development of PC microcomputers, hard, floppy, optical drives and associated controllers, installation of PC components, board and systems setup; switch and jumper settings (when required) the boot-up process, CMOS set up, upgrading, troubleshooting, applying diagnostics procedures, and other general hardware knowledge. F

316. Technology Education for Teaching and Learning. 3 credits. A study of technology that involves the identification, creation, and evaluation of hands-on technology activities for educators to use in the classroom. Activities include, but are not limited to, computer applications, robotics, energy and power projects, photography, field trips, and problem solving. The course concludes with a technology fair at a local school. F

322. Fundamentals of Photography. 3 credits. Introduction to the concepts, technologies, and applications of black and white photography. The course consists of lecture, discussion and laboratory activities. F, S

330. Quality Assurance. 3 credits. Prerequisite: Econ 210 or consent of instructor. Theoretical and laboratory study of industrial quality control methods, instrument and systems measurement techniques, and data handling procedures. F

332. 3D Design. 3 credits. Through a combination of lecture, hands-on exercises, and software applications, this course introduces the student to the 3D features of AutoCAD. Topics covered include: 3D coordinates and layout, surface meshes, regions, and solid modeling. Creation of presentation graphics using bitmap files, shading, and rendering is also discussed. S

340. Cost Estimating. 3 credits. Prerequisites: Econ 210, Math 146, or equivalent or consent of instructor. Study of basic concepts and techniques necessary for the economic analysis and evaluation of industrial design projects. F

341. Digital Integrated Circuits. 3 credits. Prerequisites: IT 211 or consent of instructor. Study of fundamental concepts of digital circuits and devices, operational characteristics of digital integrated circuits. S

373. Manufacturing Automation Systems. 3 credits. Prerequisites: IT 201, 203 and 122 or equivalent. Prerequisites: IT 201, 203 and 122 or equivalent. The study of the fundamentals of automation as it relates to automated production environments. Students will examine the forms of computer-based automation systems and the techniques and methods used within these systems to integrate through data communication networks. Topics include NC and CNC programming and systems, computer-assisted parts programming, industrial robot configurations, industrial automation applications, and integration of control systems and manufacturing technology. F

397. Cooperative Education. 1-6 credits. Prerequisites: Junior standing; 2.5 overall GPA, and faculty approval. A practical work experience with approved industrial enterprise, arranged by the student, faculty and employer. Repeatable to 6 credits. S/U grading. F, S, SS

406. Teaching Technology Education. 3 credits. Prerequisite: Junior standing and consent of instructor. An analysis of various methods employed in instructional techniques for industry and education. Development of methods and strategies of instruction use and ordering of instructional materials, based on behavioral objectives and classroom application of instructional techniques; lab activities. F

407. Product Research and Development. 3 credits. Prerequisite: IT 203 or consent of instructor. The study of product development and production planning for manufacture through the application of research methodologies, design processes, and prototype development. F

408. Materials Testing. 3 credits. Prerequisites: IT 101, 202, 203, 212, Chem 121 and 121L or equivalent. Methods by which properties (i.e., physical, mechanical, thermal, electrical, optical, and chemical) of industrial materials are tested for determination of applications. F/S

412. Design/Drafting. 3 credits. Prerequisite: IT 122 or consent of the instructor. The application of design and drafting techniques for the design of tools, machines and products. F

420. Facilities Design. 3 credits. Prerequisite: IT 122. Principles and applications of designing industrial/business facilities with emphasis on site location, environmental consideration, qualitative and quantitative modeling. Computer application in facility planning and quantitative analysis; lab activities. S

433. Manufacturing Strategies. 3 credits. Prerequisites: IT 203 and 122 or equivalent. Theoretical and laboratory study of strategies utilized by business and industry to develop and maintain a competitive edge. Topics include Lean manufacturing, Kanban, five S’s, Kaizan, pull and push modeling, fishbone-4Ms, line balancing, and PoKayske. S

442. Desktop Publishing. 3 credits. Prerequisite: IT 212 or consent of instructor. An advanced graphic design course that provides a broad understanding of computer-assisted publishing. Emphasis are on design and print production, materials, processes, analysis, and technologies of desktop publishing. S

450. Senior Capstone. 3 credits. Prerequisite: Senior standing and consent of instructor. The capstone course is designed to integrate coursework covered throughout the students’ experience at UND, specifically those within the IT program: strategic planning, product design and manufacturing, finance and distribution strategies, and quality processes and assessment schemes. Student teams will work collaboratively to create an environment that incorporates various elements of their technical expertise to produce an end product that is saleable. F

451. Computer Applications - PLCs, MicroControllers and Robotics. 3 credits. Prerequisites: IT 201, 301, 311 and 341. A study of computer integrated systems and their designs as utilized by industry to facilitate the manufacturing and production processes. Subject matter to be covered includes, but is not limited to, Programmable Logic Controllers (PLCs), microcontrollers and robots. Students will also utilize commercial computer-aided design tools, i.e., Microssim and Uliboard to design, test, and manufacture their own circuit boards where necessary. S

452. Multimedia Production. 3 credits. Prerequisites: IT 302 or consent of instructor. Lecture/Lab class designed to explore multimedia production technologies including: principles of animation, 3-D rendering, and interactive programming. The course provides hands-on experience through the production of a comprehensive project in which students examine the design principles and interface guidelines used in digital communication technologies. F

493. Workshop. 1-6 credits. A workshop course on a specific topic, primarily for, but not confined to, Continuing Education. F, S, SS

497. Directed Studies in Industrial Technology. 1-8 credits. Prerequisites: Junior standing and instructor consent. Studies in topics pertinent to the students’ needs in selected topics including (a) Teaching Technology, (b) Electronic and Computer Hardware, (c) Graphic Communication, (d) Manufacturing, and (e) Materials Science. F, S

Information Systems (ISys)

O’Keefe (Chair), Braathen, Lawson-Body and Shirazi

The Bachelor of Business Administration with a major in Information Systems is offered through the Department of Information Systems and Business Education. This major offers broad preparation for a variety of information systems careers in corporate, government, and small business environments. UND Information Systems graduates go into careers as network administrators, database developers, information systems analysts, software programmers, technology consultants, computer support specialists, administrative services managers, computer systems vendors, and into a wide variety of emerging positions within the information systems and tech-
B.B.A. WITH A MAJOR IN INFORMATION SYSTEMS

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. College of Business and Public Administration requirements (see BPA listing) and including:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISys 217</td>
<td>Fundamentals of Management Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>Math 104</td>
<td>Finite Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>Math 146</td>
<td>Applied Calculus I</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt 300</td>
<td>Principles of Management</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt 301</td>
<td>Production Management</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt 475</td>
<td>Strategic Management</td>
<td>3</td>
</tr>
<tr>
<td>Mkt 305</td>
<td>Marketing Foundations</td>
<td>3</td>
</tr>
<tr>
<td>Pol 115</td>
<td>American Government I</td>
<td>3</td>
</tr>
<tr>
<td>Psy 111</td>
<td>Introduction to Psychology</td>
<td>3</td>
</tr>
</tbody>
</table>

III. Information Systems Major Courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISBE 320</td>
<td>Professional Communication for Business</td>
<td>3</td>
</tr>
<tr>
<td>ISys 260</td>
<td>Operating Systems Principles</td>
<td>3</td>
</tr>
<tr>
<td>ISys 305</td>
<td>End-User Applications</td>
<td>3</td>
</tr>
<tr>
<td>ISys 315</td>
<td>Records and Information Management</td>
<td>3</td>
</tr>
<tr>
<td>ISys 330</td>
<td>Relational Database</td>
<td>3</td>
</tr>
<tr>
<td>ISys 411</td>
<td>Information Systems Seminar</td>
<td>3</td>
</tr>
<tr>
<td>ISys 420</td>
<td>Systems Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>CSci 170</td>
<td>Comp Prog II: Visual Basic I</td>
<td>3</td>
</tr>
<tr>
<td>CSci 170*</td>
<td>Comp Prog II: Visual Basic II</td>
<td>3</td>
</tr>
</tbody>
</table>

Two of the following, one of which must be Java, COBOL, or C++:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSci 160</td>
<td>Comp Sci I: Java</td>
<td>4</td>
</tr>
<tr>
<td>CSci 160</td>
<td>Comp Sci I: COBOL</td>
<td>4</td>
</tr>
<tr>
<td>CSci 160</td>
<td>Comp Sci I: C++</td>
<td>4</td>
</tr>
<tr>
<td>CSci 242</td>
<td>Algorithms and Data Structures</td>
<td>3</td>
</tr>
<tr>
<td>CSci 259</td>
<td>Assembly Language Programming</td>
<td>4</td>
</tr>
<tr>
<td>CSci 445</td>
<td>Math Modeling and Simulation</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>(minimum 3 courses, 9 credits)</td>
<td></td>
</tr>
<tr>
<td>ISys 308</td>
<td>Information Resource Administration</td>
<td>3</td>
</tr>
<tr>
<td>ISys 370</td>
<td>Internet/Intranet Development</td>
<td>3</td>
</tr>
<tr>
<td>ISys 430</td>
<td>Relational Database Development</td>
<td>3</td>
</tr>
<tr>
<td>ISys 460</td>
<td>Advanced Networking</td>
<td>3</td>
</tr>
<tr>
<td>ISys 499</td>
<td>Special Topics (ISys topic)</td>
<td>3</td>
</tr>
<tr>
<td>ISBE 397</td>
<td>Cooperative Education</td>
<td>3</td>
</tr>
<tr>
<td>ISBE 497</td>
<td>Internship in Information Systems and Business Education</td>
<td>3</td>
</tr>
</tbody>
</table>

MINOR IN INFORMATION SYSTEMS

25-26 semester hours, including:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISys 217</td>
<td>Fundamentals of Management Information Systems</td>
<td>4</td>
</tr>
<tr>
<td>ISys 260</td>
<td>Operation Systems Principles*</td>
<td>3</td>
</tr>
<tr>
<td>ISys 305</td>
<td>End-User Application*</td>
<td>3</td>
</tr>
<tr>
<td>ISys 330</td>
<td>Relational Database Design*</td>
<td>3</td>
</tr>
<tr>
<td>CSci 120</td>
<td>Computer Programming I (Visual Basic)</td>
<td>3</td>
</tr>
<tr>
<td>CSci 160</td>
<td>Computer Science I (Java)</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>(9)</td>
<td></td>
</tr>
</tbody>
</table>

ISys 300 and/or 400 level courses: 2 credits for ISys 307, 411, 420, 497

* Prerequisite: ISys 217 required for all CoBPA majors
** Prerequisite: ISys 305 and CSci 120

300. Operating Systems Principles. 3 credits. Prerequisite: ISys 217. An introduction to a variety of computer operating systems. Emphasis placed on terminology, concepts, system commands, architecture, maintenance, and troubleshooting. Hands-on experience with operating systems and operating environments such as Windows, DOS, UNIX, OS/400, and Windows NT Workstation and Server. F,S.

305. End-User Applications. 3 credits. Prerequisite: ISys 217. Development of proficiency in the use of end-user software applications with emphasis on spreadsheet and database. Spreadsheet applications include solutions for typical business situations using functions, macros and linking. Database applications include development of and querying of databases, linking, generating forms and reports, and developing menus. F,S.

308. Information Resource Administration. 3 credits. Introduction to information management and office management concepts and technologies including office automation, office facilities development, technology selection and implementation, office systems and procedures analysis, and office personnel supervision. F,S.

315. Records and Information Management. 3 credits. Stresses the systematic design and control over the creation, distribution, utilization, retention, storage, protection, preservation, and final disposition of records. Examination of the management of recorded information on a variety of media, including paper, microfilm, magnetic, optical, and electronic records. Costs and systems analysis, electronic filing, computer-assisted retrieval, micrographics, forms management, and imaging systems are also discussed. F,S.

320. Professional Communication for Business. 3 credits. An overview of the communication process, including composition of business letters and reports, use of computer technologies, strategies for oral communication in meeting, as well as a brief review of writing mechanics. Clear, concise, effective presentation and logical organization of business messages are emphasized. F,S.

330. Relational Database Design. 3 credits. Prerequisites: ISys 305, CSci 120, Comp Prog I: Visual Basic I. Stresses design and utilization of databases, emphasis on both minicomputer and microcomputer database development environments, integrity and security issues. Project-oriented. S.

360. Principles of Networking. 3 credits. Prerequisite: ISys 260. Explores principles of networking computer systems, telecommunications hardware, software, and media components, and approaches to efficient business data communications. The student will be exposed to telecommunications terminology, concepts, protocols, and logical and physical design of local area networks. F,S.

370. Internet/Intranet Development. 3 credits. Prerequisite: Junior standing. A survey of the development of Internet and Internet technologies. This is a course that requires a great deal of outside work. F

ISBE 397. Cooperative Education. 1-6 credits, repeatable to 12 credits. Prerequisites: overall GPA 2.5; approval of the Director of ISBE Cooperative Education. On-the-job compensated work experience in various areas related to Information Systems, Marketing Education, and Business Education. S-U grading only. F,S,SS.

411. Information Systems Seminar. 3 credits. Prerequisites: ISys 315, 360, 420; ISBE 320. The capstone course for the Information Systems major. Students will use the knowledge gained from previous Information Systems courses to participate in seminars, case studies, simulations, and field experience projects involving present and emerging information systems topics. F,S.

420. System Analysis and Design. 3 credits. Prerequisite: ISys 330. A survey of current practices in the development of information systems. Topics may include structured systems analysis and design, joint application development, prototyping, rapid application development, end-user development, and change theory and control. Project-oriented. F.

430. Relational Database Development. 3 credits. Prerequisites: ISys 330, 420 and CSci 120 or 160. Corquisite: ISys 420. Focus on development of information systems that rely on relational databases for data storage and retrieval. Topics may include advanced SQL, embedded SQL, Oracle, SQL Server, Cold Fusion, Advanced Visual BASIC, and COBOL. Project-oriented. F.

460. Advanced Networking. 3 credits. Prerequisite: ISys 360. An in-depth study of networking protocols, planning, design, security, workstations and server management, RAS, performance tuning, troubleshooting, and when possible, enterprise level network topics. S.

ISBE 497. Internship in Information Systems and Business Education. 1-6 credits. On-the-job work experience in business, education, or industry. One credit is earned on the basis of 15 hours per week per semester of occupational experience. S/U only. F, S, SS.

499. Special Topics. 1-3 credits, repeatable to 12 credits. Topics will be selected on the basis of currency and relevancy to student needs. On demand. F,S,SS.
Interdisciplinary Studies (IDS)

B. Thorp (Director)

The Interdisciplinary Studies program offers students a unique opportunity to pursue a major that combines courses from two or more disciplines. The program fosters learning, scholarship, and discovery and allows students to take advantage of new and emerging fields and topics of study. The University of North Dakota is fortunate to have faculty with sufficient breadth and depth of knowledge to provide a foundation for interdisciplinary studies. Students can take charge of their own education by designing a program of study focusing on a topic of interest, in consultation with an adviser and with the consent of the Director of Interdisciplinary Studies and the program’s executive committee. In these individualized tracks, students will undertake an in-depth study of a topic area of their choice that synthesizes information and research from two or more disciplines. General requirements for the major are described below. Interested individuals should contact the Director of Interdisciplinary Studies in O’Kelly Hall, Room 129 (phone: 701-777-2613; e-mail: ids@und.nodak.edu).

In addition to the individualized tracks described above, faculty at the University of North Dakota have developed several interdisciplinary programs of study. Examples of such programs include Graphic Design, Photography, Health Sciences, and Environmental Studies.

Recommended plans of study leading to the B.A. in Interdisciplinary Studies: Graphic Design or the B.A. in Interdisciplinary Studies: Photography have been developed that combine courses from three departments: Art, School of Communication, and Industrial Technology. The program is flexible and aims to prepare graduates for a variety of pursuits within the fields of Graphic Design and Photography.

Environmental Studies allows students to analyze the human side of environmental issues, as a means of personal and societal change. The program encourages diversity of ideas, allowing students to plan their programs (in consultation with an adviser) based on their anticipated professional and personal roles. While students may focus solely on environmental studies, they are encouraged to combine environmental studies with existing fields and to consider experiences on campus and beyond. Contact the Director of Interdisciplinary Studies for information about lists of recommended courses and advisers for the tracks outlined above.

In addition, Women Studies and Peace Studies are long-established programs at the University of North Dakota. These programs are described elsewhere in this catalog, but the major for both programs is administered through Interdisciplinary Studies. Students may choose to earn the B.A. in Interdisciplinary Studies: Women Studies or the B.A. in Interdisciplinary Studies: Peace Studies. Contact the respective directors of those programs for further information.

Courses

280. Learning Across Disciplines. 3 credits. The course will examine the nature of disciplines and fields and the way in which knowledge is organized. Basic assumptions and orientations will be compared and contrasted for scientific, social scientific, and humanities areas. Current literature in the field of interdisciplinary studies will be presented. F.S.

399. Interdisciplinary Topics. 1-3 credits. Topics, problems, or texts that connect or draw upon two or more academic disciplines will be studied. Repeatable when topics vary. F.S.SS

491. Capstone Interdisciplinary Seminar. 1-3 credits, not repeatable. Prerequisite: IDS 280. Corequisite: IDS 498. This seminar will be organized by the director of the Interdisciplinary Studies Program to act as a point of reference for students working on their Senior Projects in the program. The projects will vary from semester to semester, so the focus will shift accordingly. S

495. Service and Citizenship. 3 credits. Prerequisite: Junior or Senior standing. Students will design community service projects, or will join existing projects, and engage in volunteer action during the semester. Class meetings on campus will center on a critical discussion of volunteerism and community service; current literature on service learning will be studied. Self-assessment of experiential learning outcomes, as well as a portfolio and essay will be required. F.S.SS

498. Senior Project. 3 credits, repeatable to 6 credits. Prerequisite: IDS 280. Corequisite: IDS 491. The project will be designed on an area of interest which the student has defined. It will include data or material from a variety of disciplines or fields which the student finds relevant to the issue under study. The student will synthesize the cross-cutting information into a creative/original whole and discuss applications of this new approach. F.S.

International Studies (A&S)

The Related Fields Concentration in International Studies is designed to offer students an opportunity to gain global perspectives, to pursue greater understanding of our interconnected world, and to prepare to apply those insights in a variety of professions. The program is intended for students who have an interest in an international area or concentration that is currently not offered through existing departments. The subject matter is vast and the professional and personal opportunities for utilizing it are rich and varied. Therefore, the program is designed to provide considerable latitude in matching the
specific content of individual programs to the needs and goals of students. Thus, students will be required to work closely with their academic advisers to plan the best possible programs within the possibilities provided by the Related Fields Concentration.

**College of Arts and Sciences**

**B.A. WITH MAJOR IN INTERNATIONAL STUDIES**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

1. General Education Requirements (see University GER listing).

II. The Following Curriculum:

Total of 30 credits plus language requirement:

- **Hist 106**..............Middle Eastern Civilization............................................ (3)
- **Hist 362**..............Modern Chinese Civilization...........................................(3)
- **Anth 171**.............Cultural Anthropology .....................................................(3)
- **Pol 220**..............International Politics ...................................................... (3)
- **Rel 203**..............World Religions................................................................. (3)
- **Pols 220**..............International Politics ........................................................(3)
- **Hist 102**..............Western Civilization I......................................................... (3)
- **Hist 362**..............Modern Chinese Civilization...........................................(3)
- **Anth 171**.............Cultural Anthropology .....................................................(3)
- **Pol 220**..............International Politics ...................................................... (3)
- **Hist 102**..............Western Civilization II......................................................... (3)
- **Rel 203**..............World Religions................................................................. (3)

Three (3) credits from the following:

- **Hist 106**..............Middle Eastern Civilization............................................ (3)
- **Hist 362**..............Modern Chinese Civilization...........................................(3)

Nine credits of upper division courses in an international concentration or a modern language. These nine credits should be chosen in consultation with the International Studies Academic Adviser to assure that the classes are related and form a cohesive unit. Independent studies, readings, internships, and foreign exchange programs are some ways that this nine credit requirement may be fulfilled. Study abroad is strongly encouraged.

**Language**

Level Four Proficiency and an additional three hours in the language of proficiency.

**INTERNATIONAL STUDIES MINOR**

1. Required Courses

- **Hist 106**..............Middle Eastern Civilization............................................ (3)
- **Hist 362**..............Modern Chinese Civilization...........................................(3)
- **Anth 171**.............Cultural Anthropology .....................................................(3)
- **Pol 220**..............International Politics ...................................................... (3)
- **Rel 203**..............World Religions................................................................. (3)

2. One Additional Course selected from the following:

- **Hist 106**..............Middle Eastern Civilization............................................ (3)
- **Hist 362**..............Modern Chinese Civilization...........................................(3)

3. The minor must contain at least three credits of upper division coursework which may come from additional courses or from substitution for one of the above courses with the approval of the International Studies Academic Adviser.

4. Other courses may be substituted only with the consent of the International Studies academic adviser.

5. Language required: Level III proficiency.

**Languages: Department of Modern and Classical Languages & Literatures (Lang)**

W. Tschacher (Chair), Bakken, Benoit, Berne, DuBois, Erickson, Flesham, Koprince, Lebugle, Maury, Nelson, Rounton, and Thureen

The Department of Modern and Classical Languages and Literatures offers study in French, German, Greek, Latin, Norwegian, Russian, and Spanish. See English 161 and 162 for study of Native American languages of North Dakota. Students may elect Classical Studies, French, German, Norwegian, or Spanish as their major field of study. Minors are offered in Classical Studies, French, German, Norwegian, Russian, and Spanish.

Course work is offered in the Lower Division (100-200) develop an increasing facility for understanding and using a second language and a progressively greater awareness of cultural contrasts between the United States and other countries. The curriculum in the Upper Division (300-400) continues to develop language skills as well as the literary, linguistic, and cultural foundations for a variety of careers, for graduate study, and for an appreciation of cultural achievements.

The requirements for a major or minor including any course work in related fields, are listed below under each language. Since the schedule for courses in related fields can vary from semester to semester, students must consult their faculty adviser for those courses approved for each semester. Students are responsible for planning their own programs of study to fit their needs, interests, and objectives. They are also responsible for consulting with their faculty adviser each semester and for obtaining the adviser’s approval of the courses elected.

Students’ suggestions are solicited for topics and areas of study which can be included in the department’s special courses. The Honors Tutorial and Honors Work courses offer students the opportunity to work in areas of mutual interest to them and to members of the departmental faculty. These courses enable students to qualify for graduation with the distinction of Senior Honors in their major field.

The Department encourages study in other countries and is able to recommend academic credit for approved study by its students at foreign institutions. It also recommends students for various awards for superior academic performance, especially the Arneberg and the Larsen Foreign Travel Scholarships.

**Foreign Language Placement & Credit Test**

Students with a background in a foreign language which is currently taught in the Languages Department at UND may receive credit by taking a test in that language through the Languages Department. Students may receive advanced standing and from 4 to 16 credits in each language (12 in Latin). It is strongly recommended that students take this test during pre-registration or registration. Students who take it later than the end of their first semester in residence will need to see the Language Lab Director for the appropriate petition form, and will need to petition to establish eligibility. Students who are enrolled in a language course and wish to take the Foreign Language Placement & Credit Test in that language must take it during the first two weeks of the semester.

Credits earned through the Foreign Language Placement & Credit Test do not satisfy the World Cultures General Education Requirement. See University GER listing.

Credit which a student has earned through College Level Examination Program (CLEP) tests may be recognized by UND. See CLEP listing.

Students who have completed French, German, Latin, or Spanish Advanced Placement (AP) courses with appropriate scores may also receive credit. This credit is normally equivalent to Levels I and II in that language. See Advanced Placement listings.

Regularly enrolled students with knowledge gained through independent study or with prior language study at an unaccredited institution may apply to take Validating or Challenge Examinations to establish appropriate credit. The levels of proficiency and amounts of advanced standing are as follows:
Course
Level  Equivalent  Credit  May enroll in
I  101  4 hours  102 courses
II  102  8 hours  201 courses
III  201  12 hours  202 courses
IV  202  16 hours  Upper Division courses

Native speakers of a language other than English who wish to take classes in that language may enroll without special permission in any 400-level course, or in any 300-level course which emphasizes literary or cultural topics. Native speakers must obtain the permission of the department, however, to enroll in any 300-level course which emphasizes language instruction, or in any lower-division course. Incoming students whose native language (as indicated on their TOEFL exam) is one offered at UND should consult the Director of the Language Laboratory (M-306) about automatic waiver of the Foreign Language Placement & Credit Test.

College of Arts and Sciences

B.A. WITH A MAJOR IN A LANGUAGE

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements (see University GER listing).

II. Major Curriculum Listed Under Specific Language.

MINOR IN A LANGUAGE

I. Minor curriculum listed under specific language.

College of Arts & Sciences

B.A. WITH A MAJOR IN A LANGUAGE

Teacher Certification

Students seeking secondary teacher certification in a language must complete the following:

I. General Education Requirements (see University GER listing).

Courses and credit hours required for B.A. major in a language:

Students seeking teaching certification in a language must be from a 4 year institution) including:

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements (see University GER listing).

II. Major Curriculum Listed Under Specific Language.

III. Teacher Certification

B.A. WITH A MAJOR IN CLASSICAL STUDIES

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4 year institution) including:

I. General Education Requirements (see University GER listing).

II. Major Curriculum Listed Under Specific Language.

III. Teacher Certification

CLASSICAL STUDIES

B.A. WITH A MAJOR IN CLASSICAL STUDIES

Required: 36 credits distributed between Parts A and B as follows:

Part A: Language requirement (16 credits)

A student may fulfill the language requirement in one of three ways:

1. Latin:

   - CLAS 101  First Year Latin I (4)
   - CLAS 102  First Year Latin II (4)
   - CLAS 201  Second Year Latin I (4)
   - CLAS 202  Second Year Latin II (4)

   Additional 100- and 200-level Latin courses, other than those used to satisfy Part A.

2. Greek:

   - CLAS 151  First Year Greek I (4)
   - CLAS 152  First Year Greek II (4)
   - CLAS 251  Second Year Greek I (4)
   - CLAS 252  Second Year Greek II (4)

   Additional 100- and 200-level Latin courses, other than those used to satisfy Part A.

3. Greek and Latin:

   - CLAS 101  First Year Latin I (4)
   - CLAS 102  First Year Latin II (4)
   - CLAS 151  First Year Greek I (4)
   - CLAS 152  First Year Greek II (4)
   - CLAS 201  Second Year Latin I (4)
   - CLAS 202  Second Year Latin II (4)
   - CLAS 251  Second Year Greek I (4)
   - CLAS 252  Second Year Greek II (4)

   Additional 100- and 200-level Latin courses, other than those used to satisfy Part A.

Part B: Courses in classical civilization, literature, culture (20 credits)

The remaining 20 credits should be chosen from the following. A minimum of 15 credits must be at the 300 level or above:

- ART 420  Greek and Roman Art (3)
- CLAS 185  Introduction to Classical Mythology (3)
- CLAS 301  Latin Prose (3)
- CLAS 362  Masterpieces of Latin Literature (3)
- CLAS 364  Special Topics in Classical Literature (3)
- CLAS 494  Latin Poetry (3)
- HIST 101  Western Civilization I (3)
- HIST 301  Medieval Civilization (3)
- HIST 343  Ancient Greece (3)
- HIST 344  Ancient Rome (3)
- HIST 345  The Ancient Near East (3)
- HUM 102  Introduction to the Humanities II (4)
- PHIL 300  Classical Greek and Hellenistic Philosophy (3)
- PHIL 301  Medieval Philosophy (3)
- POLS 311  Development of Political Thought I (3)
- RELS 228  Early Christian Traditions (3)
- RELS 230  New Testament (3)

Additional 100- and 200-level Latin courses, other than those used to satisfy Part A.

Additional 100- and 200-level Greek courses, other than those used to satisfy Part A.

Other courses as approved by Classical Studies adviser.

*A student may not use the same courses to satisfy Part A and Part B.

MINOR IN CLASSICAL STUDIES

Required: 28 credits distributed between Parts A and B as follows:

Part A: Language requirement (16 credits)

A student may fulfill the language requirement in one of three ways:

1. Latin:

   - CLAS 101  First Year Latin I (4)
   - CLAS 102  First Year Latin II (4)
   - CLAS 201  Second Year Latin I (4)
   - CLAS 202  Second Year Latin II (4)

   Additional 100- and 200-level Latin courses, other than those used to satisfy Part A.

2. Greek:

   - CLAS 151  First Year Greek I (4)
   - CLAS 152  First Year Greek II (4)
   - CLAS 251  Second Year Greek I (4)
   - CLAS 252  Second Year Greek II (4)

   Additional 100- and 200-level Greek courses, other than those used to satisfy Part A.

3. Greek and Latin:

   - CLAS 101  First Year Latin I (4)
   - CLAS 102  First Year Latin II (4)
   - CLAS 151  First Year Greek I (4)
   - CLAS 152  First Year Greek II (4)

   Additional 100- and 200-level Latin courses, other than those used to satisfy Part A.

Part B: 12 credits are to be selected from the courses listed below — 9 of these credits must be at the Upper Division level (300 or above):

- ART 420  Greek and Roman Art (3)
- CLAS 185  Introduction to Classical Mythology (3)
- CLAS 301  Latin Prose (3)
- CLAS 362  Masterpieces of Latin Literature (3)
- CLAS 364  Special Topics in Classical Literature (3)
- CLAS 494  Latin Poetry (3)
- HIST 101  Western Civilization I (3)
- HIST 301  Medieval Civilization (3)
- HIST 343  Ancient Greece (3)
- HIST 344  Ancient Rome (3)
- HUM 102  Introduction to the Humanities II (4)
- PHIL 300  Classical Greek and Hellenistic Philosophy (3)
- PHIL 301  Medieval Philosophy (3)
- POLS 311  Development of Political Thought I (3)
- RELS 228  Early Christian Traditions (3)
- RELS 230  New Testament (3)

Additional 100- and 200-level Latin courses, other than those used to satisfy Part A.

Additional 100- and 200-level Greek courses, other than those used to satisfy Part A.

Other courses as approved by Classical Studies adviser.

*A student may not use the same courses to satisfy Part A and Part B.
CLASSICAL STUDIES

Courses (Clas)

101. First Year Latin I. 4 credits. Introduction to Latin grammar and syntax, with selected readings from ancient authors. F

102. First Year Latin II. 4 credits. Prerequisite: Class 101 with a grade of C or better. Continued study of Latin grammar and syntax, with selected readings from ancient authors. S

151. First Year Greek I. 4 credits. Introduction to ancient Greek grammar and syntax, with selected readings from ancient authors. On Demand.

152. First Year Greek II. 4 credits. Prerequisite: Class 151 with a grade of C or better. Continued study of ancient Greek grammar and syntax, with selected readings from ancient authors. Grade of "C" or better in Class 151 recommended. On Demand.

185. Introduction to Classical Mythology. 3 credits. Study of literary and artistic representations of Greek and Roman mythology. Different methods of interpreting myths will also be explored. These include anthropological, philosophical, and psychological approaches. On Demand.

201. Second Year Latin I. 4 credits. Prerequisite: Class 102 or equivalent. Conclusion of basic grammar and introduction to Latin authors, such as Cicero, Nepos, Petronius, or Tacitus. F

202. Second Year Latin II. 4 credits. Prerequisite: Class 201 or equivalent. Readings in Latin literature such as the works of Catullus, Ovid, or Vergil. S

251. Second Year Greek I. 4 credits, not repeatable. Prerequisite: Class 152 or equivalent. Conclusion of basic grammar and introduction to ancient Greek authors, such as Plato, Lyssias, Xenophon, or Euripides. On Demand.

252. Second Year Greek II. 4 credits. Prerequisite: Class 251 or equivalent. Selected readings from works of ancient Greek literature, such as Homer’s Iliad or Plato’s Ion. May be repeated with permission of the instructor, up to eight credits. On Demand.

301. Latin Prosse. 3 credits, repeatable to 9. Prerequisite: Class 202 or equivalent. Readings from major prose authors, such as Apuleius, Cicero, Sallust, Seneca, Livy, Petronius or Tacitus. On Demand.

362. Masterpieces of Latin Literature. 3 credits. Readings in English translation. A survey of some of the major works of Latin literature, including, for example, Vergil’s Aeneid, Ovid’s Metamorphoses, the speeches of Cicero, and the history of Livy. On Demand.

404. Latin Poetry, 3 credits, repeatable to 9. Prerequisite: Class 202 or equivalent. Readings in Latin poetry, such as Vergil, Horace, Catullus, Ovid, Juvenal, Martial, Plautus or Terence. On Demand. 

491. Seminar in Latin Literature, (CNN) credits, repeatable to 6. Prerequisite: Class 202 or equivalent. Close translation and critical analysis of a major work of Latin literature. Students will be encouraged to pursue their own topics of interest and to develop those topics into an oral presentation and/or paper. On Demand.

494. Individual Greek and Latin Readings. 1-4 credits. Prerequisite: Class 252 or 202 or equivalent. Topic to be determined by the interest of the student and instructor. May be repeated with consent of the department. May be repeated up to a total of 8 credit hours. On Demand.

MODERN LANGUAGES

Chinese

Courses (Chin)


102. First Year Chinese II. 4 credits. Prerequisite: Chin 101 with a grade of C or better. Continued study of fundamentals of Chinese grammar, oral use of the language and reading of easy Chinese. S

French

A B.A. with a major in French requires a minimum of 21 credits with at least 6 credits in each of the following areas: Grammar & Vocabulary (Fren 301, 302, 413); Literature & Civilization (Fren 371, 372, 373, 491, 494); Culture & Conversation (Fren 304, 305, 306, 307, 340, 491, 494). The following courses are required: Fren 301, 302, 305, 306.

A French minor consists of Fren 301, 302, 304, 305, 306 and a minimum of 12 additional credits. Three credits selected from Upper Division courses for a total of 14 credits.

Students interested in business may obtain a minor in French by taking Fren 301, 305, 306, 340 and a minimum of 4 additional credits of Upper Division courses for a total of 14 credits.

Study abroad is encouraged; however, all majors are required to take on campus a minimum of 3 hours in each of the three areas (see above), regardless of the number of credits acquired through transfer, including study abroad. All minors are required to take on campus a minimum of 3 hours in at least two of the areas (see above).

French Courses


102. First Year French II. 4 credits. Prerequisite: Fren 101 with a grade of C or better. Continued study of fundamentals of French grammar, oral use of the language and reading of easy French. F, S

101. Second Year French I. 4 credits. Prerequisite: Fren 102, or equivalent. Review of the structure of the language, readings in French, practice in oral and written expression. F

201. Second Year French II. 4 credits. Prerequisite: Fren 201 or equivalent. Review of the structure of the language; readings in French, practice in oral and written expression. S

301. Third Year French. 3 credits. Prerequisite: Fren 202 or equivalent. Grammar review and introduction to literature. Emphasis on reading and writing skills. F

302. Third Year French. 3 credits. Prerequisite: Fren 301 or equivalent. Grammar review and introduction to literature. Emphasis on reading and writing skills. S


305. French Conversation and Culture. 2 credits. Prerequisite: Fren 202 or consent of instructor. A conversational approach to civilization and contemporary culture. Emphasis on oral skills. F

306. French Conversation and Culture. 2 credits. Prerequisite: Fren 202 or consent of instructor or French 305. Contemporary world issues from a French perspective. S

307. A Social and Cultural History of Quebec. 3 credits. Prerequisites. Fren 202 or consent of instructor. This course focuses on the topics of geography, history, language, ideology, politics, and religion in their relationship to architecture, painting, popular crafts, song, film, and literature in Quebec. On Demand.

Lang 318. Individually Arranged Study Abroad. 1-12 credits, repeatable to 12. Prerequisite: Permission of Department. Participation in individually arranged programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. The Department reserves the right to test the student upon his or her return to Grand Forks. S/U grading only. On Demand.

Lang 319. University Sponsored Study Abroad. 1-12 credits, repeatable to 12. Prerequisite: Lang 102 or equivalent. Participation in UND-sponsored programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. Repeatable when programs or topics within a program vary. On Demand.

340. Business French. 3 credits. Prerequisite: Fren 301. Oral and written practice with terminology and idioms used in commerce and business correspondence. Readings on such topics as banking, employment, markets, production, services, trade and practices in the French business world. On Demand.

373. French-Canadian and Quebec Literature and Thought. 3 credits. Prerequisites: Fren 302 or consent of instructor. French literature from its origins to 1700; representative works with lectures, outside readings and reports. On Demand.

377. History of French Literature, 3 credits. Prerequisite: Fren 302 or equivalent. French literature from 1700 to the present day; representative works with lectures, outside readings and reports. On Demand.

413. Advanced French Grammar Review. 3 credits. Prerequisite: Fren 302 or equivalent. An oral and written approach to French grammar and stylistics. On Demand.

491. Seminar in French. 1-3 credits. Prerequisite: Fren 301 or consent of instructor. Advanced work in French language, literature or culture. May be repeated up to 12 credits. On Demand.

494. Individual French Readings. 1-3 credits. Prerequisite: Fren 302 or equivalent. Topics vary with individual interests and needs. May be repeated to a total of six hours. May be taken only with the consent of the department. F, S

German

A major in German for the Bachelor of Arts (B.A.) degree includes a minimum of 21 semester credit hours of Upper Division (Germ 300-400) course work: Germ 307, 308, 407, 408, and three additional courses (Germ 304, 312, 403, 404, 406, 409, 413, LANG 318 or 319). In addition, at least eight credit hours of course work in fields related to German approved by the faculty adviser in Languages are required.
A minor in German consists of at least twelve credit hours: Germ 307, 308, and two additional courses (Germ 304, 312, 407, 408, LANG 318 or 319).

Students interested in business may obtain a minor in German by completing Germ 307, 308, and one additional course (Germ 304, 312, LANG 318 or 319).

 Majors and minors are encouraged to make their interests known, including interest in studying in a German-speaking area in Europe, for which UND may grant academic credit. In addition to the departmental Arneberg and the Larsen scholarships awarded to students in several languages including German, the Max Kade, Stoltz and Rogers scholarships are awarded exclusively to qualified students of German.

Courses (Germ)

101. First Year German I. 4 credits. Fundamentals of German grammar, oral use of the language and reading of easy German. F, S

102. First Year German II. 4 credits. Prerequisite: German 101 with a grade of C or better. Comprehensive study of fundamentals of German grammar, oral use of the language and reading of easy German. F, S

201. Second Year German I. 4 credits. Prerequisite: German 102, or equivalent. Review of the structure of the language, practice in oral and written expression and reading in German. F

202. Second Year German II. 4 credits. Prerequisite: German 201 or equivalent. Review of the structure of the language, practice in oral and written expression and reading in German. S

304. German Phonetics. 3 credits. Prerequisite: German 201 or equivalent. Intensive pronunciation practice leading to proper German sound articulation and to a thorough knowledge of the principles of German pronunciation and intonation. S

307. Third Year German. 3 credits. Prerequisite: Germ 202 or equivalent. Further improvement of the four language skills: listening, writing, reading and speaking. Thorough grammar review. F

308. Third Year German. 3 credits. Prerequisite: Germ 307 or equivalent. Further improvement of the four language skills: listening, writing, reading and speaking. Thorough grammar review. S

312. Topics in German Culture. 3 credits. Prerequisite: Germ 202 or equivalent. A study of various aspects of German culture through the centuries. S

Lang 318. Individually Arranged Study Abroad. 1-12 credits, repeatable to 12. Prerequisite: Permission of Department. Participation in individually arranged programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. The Department reserves the right to test the student upon his or her return to Grand Forks. S/U grading only. On Demand.

Lang 319. University Sponsored Study Abroad. 1-12 credits, repeatable to 12. Prerequisite: Lang 102 or equivalent. Participation in UND-sponsored programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. Repeatable when programs or topics within a program vary. On Demand.

German Films. 3 credits. Prerequisite: Germ 308 or equivalent. Survey of the major contributions to “New German Cinema (1970’s to 1985’s).” Attention to film as an artistic medium and to the cinematic representation of German history and culture. F

404. Topics in German Literature. 3 credits, repeatable to 9 credits. Prerequisite: German 308 or equivalent. Topics vary: Literary periods, literary genres, individual authors, interdisciplinary projects. Repeatable when topics vary. S

406. German Literature in Translation. 3 credits, repeatable to 9 credits. Introduction to major intellectual and artistic achievements of German civilization from the Middle Ages to the present, emphasizing the arts in the context of history and philosophy. Repeatable when topics vary. S

407. Fourth Year German. 3 credits. Prerequisite: Germ 308. Continuing and strengthening the skills practiced in third year German. F

408. Fourth Year German. 3 credits. Prerequisite: Germ 407. Continuing and strengthening the skills practiced in third year German. S

409. German Life and Civilization. 3 credits, repeatable to 9 credits. Introduction to major intellectual and artistic achievements of German civilization from the Middle Ages to the present, emphasizing the arts in the context of history and philosophy. Repeatable when topics vary. F

413. Advanced German Grammar Review. 3 credits. Prerequisite: Germ 308 or equivalent. Written composition and oral practice, with a review of those aspects of grammar which need most practice on the advanced level. F

434. Advanced German Readings. 1-3 credits. May be repeated to a total of six hours. Prerequisite: Germ 308 or equivalent. May be taken only with the consent of the department. F, S

Norwegian

A major in Norwegian includes the following Upper Division courses: Norw 431, 432, 433, 434; a minimum of 8 credit hours selected from Norw 403 and 494; and at least 8 credit hours of approved course work in related fields.

A minor in Norwegian requires 9 credits selected from Norw 431, 432, 433, and 434, plus a minimum of one additional credit hour in Upper Division Norwegian courses.

Courses (Norw)

101. First Year Norwegian I. 4 credits. Introduction to the basic Norwegian language skills: reading, writing, speaking and listening; fundamentals of grammar. F

102. First Year Norwegian II. 4 credits. Prerequisite: Norw 101 with a grade of C or better. Basic Norwegian language skills; continuation of fundamentals of grammar. S

201. Second Year Norwegian I. 4 credits. Prerequisite: Norw 102 or equivalent. Selected cultural and literary readings, review of the structure of the language, and continued development of readings, writing, speaking, and listening skills. F

202. Second Year Norwegian II. 4 credits. Prerequisite: Norw 201 or equivalent. Selected cultural and literary readings, continued review of the structure of the language and development of language skills. S

318. Individually Arranged Study Abroad. 1-12 credits, repeatable to 12. Prerequisite: Permission of Department. Participation in individually arranged programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. The Department reserves the right to test the student upon his or her return to Grand Forks. S/U grading only. On Demand.

431. Advanced Norwegian. 3 credits. Prerequisite: Norw 202 or equivalent. Reading of selected works by leading Norwegian authors, interpretation and discussion. F

433. Norwegian Literature. 3 credits. Prerequisite: Norw 202. Norwegian literature, with special attention given to recognized masterpieces, past and present. F

434. Norwegian Literature. 3 credits. Prerequisite: Norw 202. Norwegian literature with special attention given to recognized masterpieces, past and present. S

494. Individual Norwegian Readings. 1-3 credits. May be repeated to a total of six hours. Prerequisite: six credits of other 400-level Norwegian courses. May be taken only with the consent of the department. F, S

Russian

A minor in Russian includes Russ 301 and 302, plus a minimum of four additional credit hours from among: Russ 161, 162, 494, Lang 318 or 319. With the permission of the department, other relevant courses may be elected to fulfill the requirements for a minor in Russian.

Courses (Russ)

101. First Year Russian I. 4 credits. Fundamentals of Russian grammar, oral use of the language and reading of easy Russian. F

102. First Year Russian II. 4 credits. Prerequisite: Russian 101 with a grade of C or better. Continued study of fundamentals of Russian grammar, oral use of the language and reading of easy Russian. S

301. Third-Year Russian. 4 credits. Prerequisite: Russian 202 or equivalent. Intensive oral drill. Short readings, systematic review of grammar. On-demand practice. F

302. Third-Year Russian. 4 credits. Prerequisite: Russian 301 or equivalent. Intensive oral drill. Short readings, systematic review of grammar. On-demand practice. F

304. Independent Study. 1-3 credits, repeatable to 6 credits. Prerequisites: Russian 202 or equivalent. Supervised independent study. May be taken only with consent of instructor. S

312. Individual Russian Readings. 1-3 credits. Prerequisite: Russian 302 or equivalent. May be repeated to a total of six hours. May be taken only with the consent of the department. F, S

Spanish

A major in Spanish includes the following courses beyond Lower Division work: Span 304 or 450, 307, 308, 309, 310, 311, 410; three courses from Span 420, 421, 422, 423; and a minimum of six credit
hours selected from other Upper Division courses, of which at least three credit hours must be at the 400 level. A major in Spanish with a field in teaching includes the following courses beyond Lower Division work: Span 304, 307, 308, 309, 310, 311, 450; three courses from Span 420, 421, 422, 423; and a minimum of six credit hours selected from other Upper Division courses (300/400 level). A Spanish minor consists of Span 307, 309, and three courses from among Span 310, 311, 420, 421, 422, and 423, of which one must be either Span 310 or 311; and a minimum of six credit hours selected from other Upper Division courses, of which at least three credit hours must be at the 400 level.

Courses (Span)

101. First Year Spanish I. 4 credits. Pronunciation and fundamental grammatical principles introduced through the development of skill and listening comprehension and speaking, followed by practice in reading and writing. F

102. First Year Spanish II. 4 credits. Prerequisite: Span 101 with a grade of C or better. Continued study of pronunciation and fundamental grammatical principles through the development of skill in listening comprehension and speaking, followed by practice in reading and writing. S

201. Second Year Spanish I. 4 credits. Prerequisite: Span 102 or equivalent. Review of the structure of the language, readings in Spanish, practice in oral and written expression. F

202. Second Year Spanish II. 4 credits. Prerequisite: Span 201 or equivalent. Review of the structure of the language, readings in Spanish, practice in oral and written expression. S

304. Spanish Phonetics. 3 credits. Prerequisite: Span 202 or equivalent or permission of instructor. A scientific approach to the pronunciation and enunciation of Spanish. On Demand.

307. Literary Analysis. 3 credits. Prerequisite: Span 202 or equivalent or permission of instructor. An introduction to the analysis of Hispanic literature, with particular emphasis on poetry, novel, and drama. On Demand.

388. Composicion. 3 credits. Prerequisite: Span 202 or equivalent. Practice in a variety of forms of oral Spanish. F

399. Spanish Composition. 3 credits. Prerequisite: Span 202 or equivalent. Practice in a variety of forms of written Spanish. S

310. Spanish Civilization and Culture. 3 credits. Prerequisite: Span 202 or equivalent or permission of instructor. Readings, lectures and discussions in Spanish civilization and culture. On Demand.

311. Spanish American Civilization and Culture. 3 credits. Prerequisite: Span 202 or equivalent or permission of instructor. Readings, lectures and discussions in Spanish American civilization and culture. On Demand.

312. Spanish for the Professions. 3 credits. Prerequisite: Span 202 or equivalent or permission of instructor. A study of specific terminology used in a variety of professions, a continuing review of basic language skills and instruction in Hispanic professional etiquette. On Demand.

318. Individually Arranged Study Abroad. 1-12 credits, repeatable to 12. Permission of Department. Participation in individually arranged programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. The Department reserves the right to test the student upon his or her return to Grand Forks. SU grading only. On Demand.

319. University Sponsored Study Abroad. 1-12 credits, repeatable to 12. Prerequisite: Lang 102 or equivalent. Participation in UND-sponsored programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. Repeatable when programs or topics within a program vary. On Demand.

321. Foreign Literature in Translation. 1 to 3 credits, may be repeated to a maximum of 6 credits. The faculty in the various foreign languages will lead reading and discussion in English of representative translations from their fields of specialty. Course may be taken in partial fulfillment of the Humanities requirement, but would not apply toward a language major or minor. Topics to be announced. F, S

335. Colloquia in Language and Letters. 1 to 3 credits, may be repeated to a maximum of 12 hours of which no more than 2 hours may result from participation in the French Manitoba Program. 333A, regular grading; 333B. SU grading. Prerequisites: Language 102 or equivalent. Special subjects to be announced. F, S

390. Honors Tutorial. 2 to 4 credits. Prerequisites: Language 302 or equivalent and consent of the department. Supervised independent study of topics of mutual interest to students and members of the departmental faculty. May apply toward graduation with Senior Honors. On Demand.

400. Methods and Materials in Foreign Languages. 3 credits. Offered under T&L 400. F

409. Senior Honors Thesis. 1 to 15 credits, total not to exceed fifteen. Prerequisite: consent of the Department and approval of the Honors Committee. Supervised independent study culminating in a thesis. F, S

422. History of Spanish American Literature, Conquest-Independence. 3 credits. Prerequisite: Span 307. Literature of the Spanish American countries written in the Spanish language, from the Conquest to the Independence. With lectures, readings, and discussion. F

423. History of Spanish American Literature, Independence-Present. 3 credits. Prerequisite: Span 307. Literature of the Spanish-American countries written in the Spanish language, from Independence to the present. With lectures, readings, and discussion. S

450. Advanced Spanish Grammar. 3 credits. Prerequisite: Span 309 or permission of instructor. An in-depth examination of the grammar of the Spanish language. Emphasis will be placed on those elements of Spanish which present the greatest difficulties for native speakers of English. On Demand.

461. Seminar in Hispanic Linguistics. 3 credits. Prerequisite: Spanish 304 or 450 or permission of instructor. Advanced work in a variety of alternating topics related to Hispanic linguistics such as syntax, morphology, dialectology, and history of the Spanish language. Repeatable with different topic. On Demand.

462. Seminar in Hispanic Literature and Culture. 3 credits. Prerequisite: Span 420, 421, 422, or 423 depending on topic or permission of instructor. Advanced work on a specific aspect of the Hispanic literary and cultural tradition. Repeatable with different topic. Topic subject to review by Spanish faculty. On Demand.

494. Individual Hispanic Readings. 1 to 3 credits. Prerequisite: Spanish 307 or equivalent. May be repeated to a total of six hours. May be taken only with the consent of the department. F-S

SPECIAL COURSES (Lang)

207. Introduction to Linguistics. 3 credits. An introduction to the nature of language, phonology, grammar, semantics, and historical, geographical, social and educational aspects of language. Same course as Engl 209.

250. Topics in World Languages and Cultures. 1-4 credits. Repeatable with change in topic. Beginning or intermediate instruction on subjects not covered by regular departmental offerings. No prerequisite unless one is specifically announced in the Time Schedule. On Demand.

318. Individually Arranged Study Abroad. 1-12 credits, repeatable to 12. Prerequisite: Permission of Department. Participation in individually arranged programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. The Department reserves the right to test the student upon his or her return to Grand Forks. SU grading only. On Demand.

319. University Sponsored Study Abroad. 1-12 credits, repeatable to 12. Prerequisite: Lang 102 or equivalent. Participation in UND-sponsored programs of study abroad. For major or minor credit, the language used abroad must correspond to the language being studied at UND. Repeatable when programs or topics within a program vary. On Demand.

331. Foreign Literature in Translation. 1 to 3 credits, may be repeated to a maximum of 6 credits. The faculty in the various foreign languages will lead reading and discussion in English of representative translations from their fields of specialty. Course may be taken in partial fulfillment of the Humanities requirement, but would not apply toward a language major or minor. Topics to be announced. F, S

333. Colloquia in Language and Letters. 1 to 3 credits, may be repeated to a maximum of 12 hours of which no more than 2 hours may result from participation in the French Manitoba Program. 333A, regular grading; 333B. SU grading. Prerequisites: Language 102 or equivalent. Special subjects to be announced. F, S

390. Honors Tutorial. 2 to 4 credits. Prerequisites: Language 302 or equivalent and consent of the department. Supervised independent study of topics of mutual interest to students and members of the departmental faculty. May apply toward graduation with Senior Honors. On Demand.

400. Methods and Materials in Foreign Languages. 3 credits. Offered under T&L 400. F

409. Senior Honors Thesis. 1 to 15 credits, total not to exceed fifteen. Prerequisite: consent of the Department and approval of the Honors Committee. Supervised independent study culminating in a thesis. F, S

Linguistics

Linguistics courses are taught through a cooperative program between UND and SIL. International during a nine-week summer session. Introductory courses are at the undergraduate level, and advanced courses are at the graduate level. (See the Graduate catalog for the M.A. program in Linguistics and the information at http://www.und.nodak.edu/dept/linguistics/fingma.htm.) While the University has no undergraduate degree program in linguistics, it is possible for students to have a concentration in languages and linguistics as English majors.

Students wishing to take SIL courses should apply directly to...
Management
(Mgmt)

Vitton (Chair), Helleloid, Moser, Nam, Park, Patton, Schultz and Zahrly

The mission of the Department of Management is to provide practical and innovative management courses for undergraduate management and other business majors and graduate students. The Department of Management is a part of the College of Business and Public Administration. Students will be exposed to current information concerning the study and practice of business. This information will aid students in developing managerial skills and will prepare them for advanced business studies. The importance of ethical business practices will be stressed in the delivery of the information. The faculty is dedicated, motivated, caring, experienced, and academically or professionally qualified, and will search out and use current instructional resources and methods. The faculty also engages in basic, applied, and/or instructional research and provides service to the University, business, professional, and local communities.

The Department of Management offers one comprehensive undergraduate program in management. The purpose of the program is to prepare the student for the challenges of modern management by providing an overall understanding of the basic functions of management as well as appropriate skills and problem solving methods. The program initiates the student into the complexities of organizational variables such as human resources and materials or physical facilities, and provides the student with appropriate frameworks for examining various institutions and the external environment in which these units operate. In developing an understanding of the interrelationships between the various management functions and the environment, emphasis is placed upon analytical problem solving, establishing strategies and policies, human relations, and general management principles. The curriculum also provides the student with a substantial choice of electives in business administration courses. The student majoring in management is prepared to choose from a variety of career opportunities in private and public organizations.

College of Business and Public Administration

B.B. A. WITH MAJOR IN MANAGEMENT

Required 125 credits (56 of which must be numbered 300 or above, and 60 of which must be from a four-year institution) including:

I. General Education Requirements (see University GER listing).

II. The College of Business and Public Administration Requirements, see BPA listing.

III. The Following Curriculum (Suggested Sequence)

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Sophomore Year

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<td>Econ 210*</td>
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<tr>
<td>Arts and Humanities</td>
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<tr>
<td>ISys 217</td>
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<td>Lab Science</td>
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Junior Year

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<tr>
<th>Curriculum</th>
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<td>Engl 315</td>
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<tr>
<td>Econ 303</td>
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<td>Mgmt 300</td>
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<tr>
<td>Mgmt 301*</td>
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<td>Mktr 305*</td>
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<td>ISBE 300</td>
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<tr>
<td>Fin 310*</td>
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<td>Mgmt 302*</td>
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<td>Mgmt 309*</td>
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<td>Mgmt 310*</td>
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Senior Year

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<tr>
<th>Curriculum</th>
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<tbody>
<tr>
<td>Mgmt 400*</td>
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<td>Mgmt 475*</td>
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Plus Major Electives Requirements: Minimum of eight elective credits from the following:

<table>
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<tr>
<th>Credits</th>
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<tbody>
<tr>
<td>Mgmt 395</td>
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<td>Mgmt 405</td>
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<td>Mgmt 407</td>
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<td>Mgmt 408</td>
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<td>Mgmt 410</td>
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<td>Mgmt 420</td>
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<td>Ent 385</td>
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2-4 credits

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<th>Curriculum</th>
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<td>Acct 218</td>
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<td>Econ 341</td>
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<td>Fin 360</td>
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<td>Mktg 310</td>
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<td>Mktg 315</td>
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<td>Mktg 320</td>
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</table>

SIL, preferably by April 15 (April 1 for non-U.S. citizens). Application and other information is available at: http://www.udm.und.nodak.edu/dept/linguistics/catalog.htm, or call 1-800-292-1621. The co-chairs of the linguistics program are Mark Karan (mark_karan@sil.org) and Stephen Marlett, PO Box 8977, Catalina, AZ 85738 (steve_marlett@sil.org). During the summer, further information is available from the SIL office on campus when the courses are in session during the summer (777-8105).

Other departments also offer undergraduate courses relevant to linguistics: CSD 223, Engl 207, 309, 361, 362, 370, 417, 419, 442; Language 304, 413 (French; German; Spanish 304 only).

Courses

450. Articulatory Phonetics. 2 credits. Introduction to the theory and practice of articulatory phonetics. SIL only. SS

451. Phonology I. 3 credits. Prerequisite: 450. Introduction to phonological analysis, intensive practice in applying theoretical principles to problem solving and to field techniques. SIL only. SS

452. Syntax and Morphology I. 3 credits. Fundamentals of analyzing the grammatical and morphological structures of languages; analytical skills developed through graded problems based on a wide variety of languages. SIL only. SS

460. Ethnographic Methods in Field Linguistics. 3 credits. Orientation on cultural anthropology and ethnographic research methods for the field linguist, with special attention to the interaction between language and culture. SIL only. SS

470. Introduction to Sociolinguistics. 2 credits. Introduction to language as a social phenomenon dependent on age, gender, social class, status, setting, and topic, with special attention to multilingual societies. SIL only. SS

480. Second Language Acquisition Theory and Practice. 3 credits. Equips the student for success in self-directed learning of language and culture through working one-on-one with a native speaker of another language. Includes individual mentoring, and discussion of strategies, theoretical principles, and the second language acquisition literature. SS
**Courses**

300. **Principles of Management.** 3 credits. Prerequisite: Junior classification. This course provides a survey of the traditional functions of management with primary emphasis on planning, organizing, controlling, and leading. This emphasis involves coverage of managerial decision making, leadership, motivation, interpersonal communication, staffing human resources, and organizational structure, design, and change and development. Additional topics include the history of managerial thought, management systems, international management, and business ethics and social responsibility. F, S.

301. **Production Management.** 3 credits. Prerequisite: Econ 210. This course teaches students the quantitative tools required to design and control of systems concerning the production of goods and services. Specifically, the course is designed to survey the following topics at the individual, group, and organizational levels: individual perceptions, attitudes, values, motivation, leadership, communication, group dynamics, and problem-solving. F, S.

302. **Human Resource Management.** 3 credits. Prerequisites: Econ 210 and Mgmt 300. A survey of the concepts, procedures, and programs associated with Human Resource Management in organizations. It includes an overview of the basic management functions and legal issues linked to the execution of the personnel functions of employment, performance appraisal, training, compensation, and development. F, S.

305. **Managerial Concepts.** 3 credits. Prerequisite: Junior level standing; not available to students in the College of Business and Public Administration. This course is designed to expose the student to a variety of concepts presented within the framework of the traditional functions of management. The various approaches to planning, decision-making, organizing, motivating, workers, groups, and ethics, personnel staffing, leadership, change, conflict, communications, and controlling are explored in the context of supervisory personnel development. F, S.

309. **Quantitative Approaches to Management Decisions.** 3 credits. Prerequisite: Econ 210. This course teaches the application of quantitative techniques which are useful in the decision-making process. Specifically, techniques include: decision theory, simulation, inventory models, linear programming, queuing, economic evaluation, game theory, and Markov processes. F, S.

310. **Organizational Behavior.** 3 credits. Prerequisites: Econ 210, Mgmt 300. The objective of this course is to allow the student to become acquainted with and experience various ways of thinking about and responding to the issues of human relations and management. The course is designed to survey the following topics at the individual, group, and organizational levels: individual perceptions, attitudes, values, motivation, leadership, communication, group dynamics, and problem solving. F, S.

397. **Cooperative Education in Management.** 1-4 credits, repeatable to a maximum of 12 credits. Prerequisites: Mgmt 302, 306, 385 GPA, and consent of coordinator. On-the-job compensated experience in general management or management of human resources. SOU grading only. F, S.

403. **Special Topics.** 3 credits. Specific topics vary. Course will offer specialized knowledge in a specific area; e.g., Human Resource Management, Operations Management, Strategic Management. May be taken a maximum of two times for credit. On Demand.

406. **Entrepreneurship and Small Business Management.** 3 credits. Prerequisites: Mgmt 302. This course involves starting businesses, in buying businesses, in selling businesses, in assessing the possibility of new ventures, and in solving problems of small businesses. A term project is required. On Demand.

407. **Wage and Salary Administration.** 3 credits. Prerequisite: Mgmt 302. The role of a wage and salary administrator is studied. The course focuses on the fundamentals of wage theory, job evaluation and pricing, employee evaluation, individual and group incentive plans, benefits, and managerial/executive compensation. F.

420. **Multinational Management.** 3 credits. Prerequisite: Mgmt 300 and Fin 310. This course provides an introduction to the dynamics of management processes encountered in a multinational business setting. It covers comparative management systems and analysis of various environmental conditions for making effective managerial decisions within a multinational company. Adaptation to different cultures is emphasized as one of the essential components of the successful multinational management equation. F.

425. **Strategic Management.** 3 credits. Prerequisites: Mgmt 300, 301, Fin 310, Mkt 305, and 105 credits. This is the capstone course in business. Students apply knowledge gained in accounting, economics, finance, management, and marketing to develop business strategies. Case studies, simulations, and other exercises are used to develop executive skills. F, S, SS.

490. **Senior Honors Thesis.** 1-8 credits, repeatable to 9. Prerequisite: Hon 404. Supervised independent study culminating in a thesis. F, SS.

494. **Readings in Management.** 1 to 4 credits. Prerequisite: Senior or graduate standing, and consent of instructor. Selected readings in management. F, S.

497. **Internship in Management.** 1 to 4 credits. Prerequisite: Management major, senior standing, and consent of instructor. Guided, practical experience in personnel, production, and administration with selected participating businesses and other organizations. The essence of this course is SOU grading only. F, SS.

**Marketing (MRKT)**

S. Nelson (Chair), Askim, Bateman, Elbert, Lesch, Stillerud, and Tangrud

The Department of Marketing is part of the College of Business and Public Administration. The Department offers a program in Marketing which is designed to prepare students for domestic and international managerial careers in sales, advertising, distribution, marketing research and product planning. In accordance with the mission of the College of Business and Public Administration, the mission of the Faculty of Marketing is: To provide a high quality marketing program that develops a rich understanding of marketing concepts and their application in a variety of interdisciplinary endeavors while also contributing to the enhancement of skills in problem solving, communication, leadership, team building, and the use of technology. These programming efforts are designed to attract a diversity of achievement-oriented students as a foundation for student, University, and state advancement. The marketing faculty offer a balanced and integrated commitment to excellence in teaching, research, and service. The Faculty strives to meet this mission by adhering to the following goals and values: (1) Educate students to be literate and competent in conducting marketing operations locally, regionally, nationally, and internationally, (2) Cooperate and interact with local and regional businesses, (3) Integrate management issues and delivery systems throughout the marketing curriculum, (4) Provide faculty with an environment and support system conducive to the encouragement of intellectual contributions and service endeavors that are consistent with the mission of the College and University, (5) Seek and reward excellence, (6) Respect diversity of thought and culture, (7) Treat students, colleagues, and all stakeholders fairly, equitably, and with dignity.

**College of Business and Public Administration**

**B.A. WITH MAJOR IN MARKETING**

Required 125 credits (18 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

- **General Education Requirements,** (see University GER listing).
II. The College of Business and Public Administration Requirements (see BPA listing) and including:

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Acct 200</td>
<td>Elements of Accounting I &amp; II</td>
<td>6</td>
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<tr>
<td>Econ 201</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>Econ 202</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>Econ 210</td>
<td>Introduction to Business and Economics</td>
<td>3</td>
</tr>
<tr>
<td>Econ 303</td>
<td>Money and Banking</td>
<td>3</td>
</tr>
<tr>
<td>Eys 217</td>
<td>Fundamentals of Management</td>
<td>4</td>
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<tr>
<td>Mgmt 310</td>
<td>Principles of Management</td>
<td>3</td>
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<tr>
<td>Mgmt 315</td>
<td>Principles of Financial Management</td>
<td>3</td>
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<tr>
<td>Mgmt 475</td>
<td>Strategic Management</td>
<td>3</td>
</tr>
<tr>
<td>Mrkt 305</td>
<td>Marketing Foundations</td>
<td>3</td>
</tr>
<tr>
<td>Mrkt 315</td>
<td>Fundamentals of Public Speaking</td>
<td>3</td>
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One course selected from the following:

- Anth 171: Introduction to Cultural Anthropology (3)
- Soc 110: Introduction to Sociology (3)
- Psych 111: Introduction to Psychology (3)

Major in Marketing

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Mrkt 310</td>
<td>Consumer Behavior</td>
<td>3</td>
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<tr>
<td>Mrkt 325</td>
<td>International Marketing</td>
<td>3</td>
</tr>
<tr>
<td>Mrkt 320</td>
<td>Marketing Research I: Design</td>
<td>3</td>
</tr>
<tr>
<td>Mrkt 420</td>
<td>Marketing Research II: Application</td>
<td>3</td>
</tr>
<tr>
<td>Mrkt 450</td>
<td>Marketing Management</td>
<td>3</td>
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Complete a total of 12 credits from the following:

No more than a total of 3 credits from Mrkt 396, Mrkt 397, and Mrkt 497 may be used to satisfy this requirement.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Mrkt 391</td>
<td>Personal Selling</td>
<td>3</td>
</tr>
<tr>
<td>Mrkt 312</td>
<td>Advertising</td>
<td>3</td>
</tr>
<tr>
<td>Mrkt 315</td>
<td>Retail Management</td>
<td>3</td>
</tr>
<tr>
<td>Mrkt 396</td>
<td>Directed Studies in Marketing</td>
<td>1-3</td>
</tr>
<tr>
<td>Mrkt 397</td>
<td>Co-Operative Education in Marketing</td>
<td>1-8</td>
</tr>
<tr>
<td>Mrkt 411</td>
<td>Sales Management</td>
<td>3</td>
</tr>
<tr>
<td>Mrkt 412</td>
<td>Promotional Strategy</td>
<td>3</td>
</tr>
<tr>
<td>Mrkt 425</td>
<td>Current Perspectives in Global Marketing</td>
<td>3</td>
</tr>
<tr>
<td>Mrkt 440</td>
<td>Special Topics in Marketing</td>
<td>3</td>
</tr>
<tr>
<td>Mrkt 445</td>
<td>Sport Marketing</td>
<td>3</td>
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<tr>
<td>Mrkt 497</td>
<td>Internship in Marketing</td>
<td>1-8</td>
</tr>
</tbody>
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Courses

201. Personal Marketing. 3 credits. The course applies the marketing concept to planning of career tracks. Emphasis is placed on the development of individual marketing plans during the sophomore/junior year thus initiating a systematic career planning process. Career planning prior to the senior year helps incorporate internships, job shadowing, and/or cooperative education into students' program of study. Particular emphasis is placed on the application of the marketing concepts in professional career initiation phases and development delivery of marketing presentations. The course also incorporates attitude testing, mock interviews, discussion of job search using the Internet, networking, and time management strategies, and portfolio development. F, S

300. Consumer Behavior. 3 credits. Prerequisite: Mrkt 305. Theoretical and applied analysis of consumer-related activities of individuals. Investigations of the reasons behind and the forces influencing the selection, purchase, use, and disposal of goods and services. F, S

311. Personal Selling. 3 credits. Prerequisite: Mrkt 305. The personal selling process including prospecting, qualifying, handling objections, and closing. F, S

312. Advertising. 3 credits. Prerequisite: Mrkt 305. Thorough examination of the basis for designing an advertising campaign. Special emphasis on buyer perceptions, theories of communication and learning, and their relation to message, media, and media selection. F, S

315. Retail Management. 3 credits. Prerequisites: Mrkt 305, and 310. Application of marketing and financial principles to the planning and execution of retail management. Includes analyses of relevant institutions and interest groups. F

320. Marketing Research I: Design. 3 credits. Prerequisites: Mrkt 305, and Econ 210. Research design from a marketing perspective. Addresses problem formulation, research design, methodology, and appropriate statistical methods. F, S

325. International Marketing. 3 credits. Prerequisite: Mrkt 305. Fundamentals of conducting marketing operations across national boundaries, market potential estimation, entry strategies, program management and control. F, S

396. Directed Studies in Marketing. 1-3 credits. Prerequisites: Mrkt 310, and Consent of Instructor. Research in some aspect of marketing. Written reports and oral examinations. F, S, SS

397. Cooperative Education in Marketing. 1-8 credits, repeatable only to maximum of 8 credits. Prerequisites: 9 hours of marketing, GPA of 2.75, and Consent of Instructor. Compensated, on-the-job experience in various areas of marketing. F, S, SS

411. Sales Management. 3 credits. Prerequisite: Mrkt 305. The practice of sales management including sales force recruiting, training, organization, motivation, compensation, and evaluation. F

412. Promotional Strategy. 3 credits. Prerequisite: Mrkt 312. Relationship of marketplace activities to promotional processes; integration of promotional tools into marketing strategy. F

415. Retail Buying. 3 credits. Prerequisite: Mrkt 315. Analysis of buying practices and techniques, with a focus on the impact of consumer buying power, resources, governmental regulations, merchandiser planning and control, pricing, purchase negotiations and open-to-buy. S

420. Marketing Research II: Application. 3 credits. Prerequisite: Mrkt 320. Application of procedures appropriate for the analysis and interpretation of marketing data. F, S

425. Current Perspectives in Global Marketing. 3 credits. Prerequisite: Mrkt 305. An examination of emerging worldwide economic, political, and cultural trends and the resulting challenges to international marketing. Students will be introduced to major international organizations and regional trade blocs to explore their implications on global marketing and trade. F

445. Sport Marketing. 3 credits. Prerequisite: Mrkt 305. Application of marketing principles and processes to the sports industry. Involves both the marketing of sports products and services as well as the marketing of non-sports products through association with sports. S

450. Marketing Management. 3 credits. Prerequisites: Mrkt 310, Mrkt 320, and Senior Standing. Capstone course addressing the firm's micro and macro environments from a strategic marketing decision-making perspective. F, S

497. Internship in Marketing. 1-8 credits, repeatable only to maximum of 8 credits. Prerequisites: Mrkt 305, and Consent of Chair. Compensated, practical experience with selected participating firms. S, SS

Mathematics

(Math)

Dearden (Chair), Bevelacqua, Collings, Dunnigan, Gilsdorf, Gregory, J. Iiams, M. Iiams, Khavanin, Metzer, Millsopua, Peterson, Richards, Zerr

The functions of the Mathematics Department within the total framework of the University are varied. Besides the training of undergraduate and graduate majors in the field of Mathematics, the Department offers courses designed to meet the needs of students in business; engineering; physical, social, and biological sciences; and elementary and secondary education.

The student considering mathematics as a career should realize that emphasis in mathematics courses will change as he/she progresses through college and graduate school. The early emphasis on solving problems is later subordinate to the more important tasks of formulating problems in mathematical language and of dealing effectively with mathematical structures and abstract ideas.

It should be stressed that an effective mathematician in any type of employment should be a well-educated person. He/she should have not only the technical background of calculus and differential equations taken by most scientists and engineers, and the more advanced mathematical training required for a major in mathematics, but should also have taken a selection of courses from other disciplines. A student who plans to continue beyond the bachelor’s degree in mathematics should also acquire a reading knowledge of at least one and preferably two of the foreign languages in which much of the current literature in mathematics is written, namely, German, Russian, and French. All students should, of course, acquire fluency in the written and oral expression of ideas in English.

The main fields of opportunity in mathematics today are teaching, mathematical statistics, mathematics in industry, mathematics in government and actuarial mathematics. The Mathematics Department
MINOR IN MATHEMATICS

Required 20 credits as follows:

Math 165, 166, 265...Calculus I, II, III... (12)

At least three additional courses numbered 208 and above, not including 277, 377, 387 or 477. Math 405, 415, 416, 494, and 495 may be used only with prior approval from the Mathematics Department.

MINOR IN STATISTICS (Plan A)

Required: 3 semesters of calculus (Math 165, 166, 265) as prerequisite.

Required: 9 credits, including:

* Math 421, 422...Statistical Theory I, II... (6)

3 hours from:

Biol 470...Biometry... (3)

EFR 513...Basic Computer Applications in Education... (2)

EFR 514...Small System Computer Applications in Education... (3)

EFR 516...Statistics II... (3)

*ECE 515...Design of Engineering Experiments... (3)

Econ 310...Intermediate Business and Economic Statistics... (3)

*EE 411...Communications Engineering... (3)

*Math 321...Applied Statistics... (3)

*Math 403...Theory of Probability... (3)

*Math 415...Topics in Applied Math (when appropriate)... (3)

Math 416...Topics in Statistics... (1-3)

Psych 541...Advanced Univariate Statistics... (3)

Psych 542...Test Construction and Multivariate Analysis... (3)

Psych 543...Experimental Design... (3)

Soc 521...Advanced Analytical Methods... (3)

*Indicates calculus as a prerequisite.

MINOR IN STATISTICS (Plan B)

Required: Math 168, Finite Mathematics, and Math 146, Applied Calculus I, as prerequisites.

Required: 12 credits from:

Biol 470...Biometry... (3)

EFR 513...Basic Computer Applications in Education... (2)

EFR 514...Small System Computer Applications in Education... (3)

EFR 516...Statistics II... (3)

*ECE 515...Design of Engineering Experiments... (3)

No more than 1 class from:

Econ 310...Intermediate Business and Economic Statistics... (3)

Psych 241...Introduction to Statistics... (4)

Soc 326...Sociological Statistics... (3)

Econ 300...Intermediate Business and Economic Statistics... (3)

*EE 411...Communications Engineering... (3)

*Math 321...Applied Statistics... (3)

*Math 403...Theory of Probability... (3)

*Math 415...Topics in Applied Math (when appropriate)... (3)

Math 416...Topics in Statistics... (1-3)

*Math 421...Statistical Theory I... (3)

*Math 422...Statistical Theory II... (3)

Psych 541...Advanced Univariate Statistics... (3)

Psych 542...Test Construction and Multivariate Analysis... (3)

Psych 543...Experimental Design... (3)

Soc 521...Advanced Analytical Methods... (3)

*Indicates calculus as a prerequisite.

Courses

NOTE: PTP* indicates an appropriate score in the Placement Testing Program (PTP) is required.

102. Intermediate Algebra, 3 credits. (Does not count toward graduation at UND.) Prerequisite: PTP* Equations, exponents, quadratic equations, lines, graphs, inequalities. S/J grading only. F,S,SS

103. College Algebra, 3 credits. Prerequisite: PTP* or Math 102. Sections meeting 5 days per week are offered for students determined eligible by the Math Department. Polynomial and rational functions, inverse functions, exponential and logarithmic functions, simple conics, systems of equations, determinants, arithmetic and geometric sequences, the Binomial Theorem. F,S,SS

104. Finite Mathematics, 3 credits. Prerequisites: PTP* or Math 102. An elementary introduction to some of the mathematical techniques which have applications in the management, life, and social sciences. Topics covered include systems of linear equations and inequalities, matrices, linear programming, mathematics of finance, and elementary probability. F,S,SS

105. Trigonometry, 2 credits. Prerequisite: One year of high school geometry and either PTP* or Math 102. Angles, trigonometric functions and their inverses, solving triangles, trigonometric identities. F,S,SS

provides a test center for Actuarial Examinations and offers several courses which enable the student to prepare for them.

Students may pursue the B.S. degree with a major in mathematics through the College of Arts and Sciences. Teacher certification is possible provided appropriate requirements are met.

Elective courses are to be taken toward the bachelor’s degree are decided in consultation with an adviser from the Mathematics Department, and vary according to the needs of the student, consistent with the particular objective of the general education and mathematical education of the student.

Placement in Mathematics. Appropriate initial enrollment in mathematics courses at UND is determined by a combination of entrance and placement tests or the acceptance of credits for transfer, Advanced Placement (AP) and College Level Examination Program (CLEP). Students enrolling without such previous credit are directed to entry level mathematics courses, courses numbered 102 through 165 and 277 depending on their scores on the ACT Mathematics test and/or a combination of scores on tests from the Placement Testing Program (PTP) sponsored by the Mathematical Association of America.

Anyone without the required prerequisites enrolling in a mathematics course may be dropped from the class by the instructor.

College of Arts and Sciences

B.S. WITH MAJOR IN MATHEMATICS

Required 125 credits (50 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. Non-Mathematics Requirements:

Three hours of Computer Science and 8-9 hours of writing courses as approved by the Mathematics Department.

III. The Following Curriculum:

39 major hours including:

Math 165, 166, 265...Calculus I, II, III... (12)

Math 327...Applied Linear Algebra... (3)

Math 442...Linear Algebra... (3)

Math 266...Elementary Differential Equations... (3)

Two full two-semester sequences from the list below.

At least one sequence must include two 400 level courses... (12)

Electives (math courses numbered 208 and above, excluding 277, 377, 477)... (9)

Two Semester Sequences

Math 208 & 408...Discrete Mathematics & Combinatorics... (3)

Math 332 & 412...Introduction to Partial Differential Equations and Differential Equations... (3)

Math 409, 435, 471...Any two of these three (for at most one sequence): Geometry, Number Theory, Complex Variables... (9)

Math 421 & 422...Statistical Theory I & II... (3)

Math 431 & 432...Advanced Calculus I & II... (3)

Math 441 & 442...Abstract Algebra & Linear Algebra... (3)

Math 461 & 462...Numerical Analysis I & II... (3)

B.S. WITH TEACHER CERTIFICATION

Students seeking secondary teacher certification in Mathematics must complete the Department of Teaching and Learning Requirements in Secondary Education (see Department of Teaching and Learning listing). Students seeking certification must follow the curriculum for the B.S. in Mathematics and complete items (a) and (b) below:

a. Choose the Math sequences of:

Math 441 & 442

Math 409 & 435


NOTE: Students considering graduate school are urged to take a full year of Advanced Calculus. Math 431, 432.

All students are urged to take courses in disciplines which make use of mathematics such as Physics, Chemistry, Engineering, Computer Science and Biological Science.
110. Precalculus. 4 credits. Prerequisite: Math 102 or PTP*; Equations and inequalities; polynomial rational, exponential, logarithmic and trigonometric functions; inverse trigonometric functions; algebraic and trigonometric methods commonly needed in calculus. F,SS

115. Introduction to Mathematical Thought. 3 credits. The course will focus on analysis and interpretation of common types of mathematical arguments as well as having students construct their own arguments. A combination of topics will be included, such as: elementary combinatorics, probability, statistics, set theory, number theory, geometry and topology, mathematical logic, the mathematics of voting, etc. S or On Demand.

146. Applied Calculus I. 3 credits. Prerequisite: PTP* or Math 103 or 104. A non-rigorous introduction to differential and integral calculus. Topics include limits, continuity, differentiation and integration techniques, and applications. F,SS

165. Calculus I. 4 credits. Prerequisites: PTP* or completion of Math 107 with a grade of C or better, or permission of the Mathematics Department. A theoretical treatment of systems of linear equations, matrices, vector spaces, linear transformations and elementary canonical forms. S

166. Calculus II. 4 credits. Prerequisite: Completion of Math 165 with a grade of C or better, or permission of the Mathematics Department. A theoretical treatment of systems of linear equations, matrices, vector spaces, linear transformations and elementary canonical forms. S

208. Discrete Mathematics. 3 credits. Prerequisite: PTP* or Math 103 or Math 107. Introduction to Set Theory, Functions and Relations, Permutations and Combinations, Logic, Boolean Algebra, Inductions, Difference Equations. Other topics from Graphs, Finite Automata and Formal Languages. F,SS

265. Calculus III. 4 credits. Prerequisite: Math 166. Multivariate and vector calculus including partial derivatives, multiple integration, line and surface integrals, Green's Theorem, Stokes' Theorem, the Divergence Theorem. F,SS

266. Elementary Differential Equations. 3 credits. Prerequisite: Math 265 and proficiency in a programming language. Solution of elementary differential equations by elementary techniques. Laplace transforms, introduction to matrix theory and systems of differential equations. F,SS

277. Math for Elementary School Teachers. 3 credits. Prerequisite: PTP* or Math 103. For elementary education majors only. Development of the number systems used in elementary schools. Includes some methods and work with laboratory materials. FS

308. History of Mathematics. 3 credits. Prerequisite: Math 166 or equivalent, or consent of instructor. This is a course on the conceptual and chronological history of mathematics. The course involves the interpretation and analysis of how and why mathematical ideas have developed over time, including political and cultural considerations. Topics include: numbers and continuing systems, non-Western developments, mathematics of Egypt, Babylon and Greece, early European developments, the Renaissance, the Scientific Revolution and the development of calculus, women in mathematicians, 19th century mathematics.

315. Topics in Computational Mathematics. 1-3 credits. Prerequisite: Math 266 and proficiency in a programming language, or consent of instructor. An introduction to mathematical methods useful in the computational analysis of problems in applied mathematics. Topics may include numerical methods, numerical simulation, symbolic computation, and theory of computation. May be repeated for credit with consent of instructor up to six credits. On Demand.

321. Applied Statistical Methods. 3 credits. Prerequisite: Math 166. Introduces statistical techniques for students with a background in single-variable calculus. Topics include descriptive statistics, continuous and discrete probability density functions, sampling distributions, point and interval estimation, and tests of hypotheses. F

327. Applied Linear Algebra. 3 credits. Prerequisite: Math 166. A practical treatment of systems of linear equations, finite dimensional vector spaces, linear transformations, determinants, matrices, eigenvalues, and eigenvectors. S

330. Set Theory and Logic. 3 credits. Prerequisite: Math 166 or consent of instructor. An introduction to set systems and operations on sets, mathematical logic, relations and functions, development of the natural and real number systems. F,SS


377. Geometry for Elementary Teachers. 3-1 credits. For elementary education majors only. Experimental and inductive discovery in building geometric concepts at the elementary school level. On Demand.

397. Cooperative Education. Prerequisites: 15 completed credits in Math including Math 165, 166, 265, in addition to standard Co-op requirements. A practical work experience with an employer closely associated with the student’s academic area. 1-8 credits required to 18. Arranged by mutual agreement among student, department, and employer. A maximum of 6 cooperative education credits may be applied towards major and/or minor. M. 3-3 credits; only F,SS

403. Theory of Probability. 3 credits. Prerequisite: Math 265. Sets, sample spaces, discrete probability, distribution functions, density functions, characteristic functions, standard distributions, moments, and other distributions. S

405. Selected Topics in Mathematics. 1-3 credits. Prerequisite: permission of the Mathematics Department. May be repeated to a maximum of six credits. On Demand.

408. Combinatorics. 3 credits. Prerequisites: Math 208 and 166. Introduction to the techniques and reasoning needed in combinatorial problem-solving. The course may include topics related to combinatorics, such as graph theory.

409. Geometry, 3 credits. Prerequisite: Math 166. Metric and synthetic approach to Euclidean geometry. The usual topics in elementary geometry treated in a mathematically logical way. Topics include congruence, inequalities, parallelism, similarity, area, solid geometry and the circle.


415. Topics in Applied Mathematics. 1-3 credits. Prerequisite: Math 265 and consent of instructor. An introduction to selected areas in applied mathematics chosen from a variety of topics including: Applied algebra, difference equations, linear programming, modeling and simulation, control theory. May be repeated for credit with consent of instructor up to six credits. On Demand.

416. Topics in Statistics, 1-3 credits. Prerequisites: An elementary statistics course and either Math 146 or Math 165, or consent of instructor. An introduction to a variety of topics in statistics including: Linear models in categorical analysis, Bayesian methods, decision theory, ridge regression, Non parametric techniques, stochastic games and models. The number of topics to be covered is at the discretion of the instructor and may be used to permit greater depth of coverage and sufficient practical illustrations. May be repeated for credit with consent of instructor up to six credits. On Demand.

421, 422. Statistical Theory I and II. 3 credits each. Prerequisite: For 421, Math 265 and 422. Prerequisites: Math 265. Discrete and continuous random variables, expectation, moments, moment generating functions, properties of special distributions, introduction to hypothesis testing, sampling distributions, central limit theorem, curve of regression, correlation, empirical distribution by least squares, maximum likelihood estimation, Neyman-Pearson lemma, likelihood ratio test, power function, chi-square tests, change of variable, “C” and “F” tests, one and two-way ANOVA, nonparametric methods. F

425. Cryptographic Mathematics. 3 credits. Prerequisite: Math 208. This course develops the math behind elementary symmetric-key ciphers and a variety of public-key schemes. Modern block ciphers may be discussed. F,SS

432. Advanced Calculus I and II. 3 credits each. Prerequisite: For 431, Math 330 or consent of instructor. For 432, Math 431. Real number system, functions, sequences, limits, continuity, differentiation, integration, infinite series, power series and vector analysis. F

435. Theory of Numbers. 3 credits. Prerequisite: Math 166. Basic properties of numbers, including divisibility, primes, congruences, Diophantine equations and residue theory. S

441. Abstract Algebra. 3 credits. Prerequisite: Math 330 or consent of instructor. Rings, integral domains, fields, elements of group theory. F

442. Linear Algebra. 3 credits. Prerequisite: Math 265 and 330 or consent of instructor. A theoretical treatment of systems of linear equations, vector spaces, linear transformations and elementary canonical forms.

450. Elements of Topology. 3 credits. Prerequisite: Math 330 or consent of instructor. Set operations, mappings, functions, continuity, compactness, connectedness and topological spaces with special emphasis on topologies of the real line. On Demand.

466. Mathematical Modeling. 3 credits. Prerequisite: Math 266 and either 327 or 442, or consent of instructor. The primary goal of the course is to present the mathematical analysis provided in scientific modeling. Topics may include population modeling, mechanical vibrations, traffic flow, epidemic modeling, queues and decay processes. F

467. Numerical Analysis I and II. 3 credits each. Prerequisite: Math 266, and either 327 or 442, and a scientific programming language. Prerequisite for 462 is Math 461. Numerical techniques for: the solution of equations in one or several unknowns, approximate integration, differential equations, approximation theory, optimization theory and matrix analysis. Corresponding error analysis will be investigated. F, S

465. Topics in Operations Research. 3 credits. Prerequisites: Math 265 and either 327 or 442, or consent of instructor. The primary goal of this course is to present mathematical methods useful in the analysis of problems that involve making decisions. Topics may include optimization, mathematical programming, network analysis, decision theory, game theory, queuing theory, and dynamic programming.

471. Introduction to Complex Variables. 3 credits. Prerequisite: Math 265 and 330 or consent of instructor. The complex plane, analytic functions, complex integration, power series, the theory of residues and contour integration, conformal mapping, Laplace transforms, introduction to matrix theory and systems of differential equations.

477. Topics in Elementary School Mathematics. 1-3 credits. May be repeated for credit up to six credits. For elementary education majors only. Selected topics from mathematical concepts appropriate to the elementary school curriculum. On Demand.

479. Topics in Mathematics Education. 1-3 credits. Prerequisite: Consent of instructor. May be repeated for credit up to six credits. Selected topics from mathematical concepts appropriate for K-12 educators. On Demand.

494. 495. Reading Course in Mathematics. 1-3 credits, repeatable to six credits. Consent of instructor required. Directed individual reading on selected topics not developed in other courses. F,SS
Mechanical Engineering (ME)

D. Moen (Chair), Ames, Bandyopadhyay, Bibel, Grewal, Johnson, Semke, Ness, Zahui, Stanlake, and Tolbert

The primary mission of the Mechanical Engineering Department is to prepare graduates to function effectively as mechanical engineers in a wide spectrum of industries. The Department’s further mission is to engage in research and scholarly activity that contributes to basic and applied discovery to enhance student learning while being of benefit to the state, region, and nation. Educational objectives contributing to the overall mission are:

1. Develop students’ critical thinking and problem solving skills by applying the principles of science and mathematics.
2. Give students a broad understanding of mechanical engineering including the areas of a) thermal sciences, b) mechanical design, and c) manufacturing processes.
3. Give students a design experience that blends scientific knowledge and engineering analysis that includes a breadth of knowledge in social and humanitarian issues.
4. Equip graduates with the knowledge, technical skills, leadership skills, and communication skills to qualify for entry level professional positions in the multitude of industries employing mechanical engineers.
5. Provide opportunities for students to prepare for graduate school.

Continuous assessment of student learning in accordance with specific program outcomes, including input from program constituents such as students, alumni, employers and industry advisory groups, provides opportunity to measure success in meeting the mission of the department. Beginning with the freshman year, teamwork, problem solving, and design exercises are interwoven throughout the curriculum, culminating in a two-semester capstone design project during the senior year. Several courses include laboratories which develop experimental, teamwork, and communication skills. Technical papers required by selected courses develop knowledge of contemporary issues as well as communication skills. State-of-the-art computer software is used extensively throughout the curriculum. Within our bachelor’s degree we offer an option known as the “aerospace concentration.” This option adds five credits to the degree but results in the student earning a private pilot’s license as well as tailoring the engineering degree towards the aerospace industry. Students are strongly encouraged to prepare for a professional license by taking the national fundamentals of engineering (FE) exam prior to graduation. Students who excel academically are also well qualified to pursue graduate work in mechanical engineering or a related field.

See additional Combined Degree Program under the School of Engineering and Mines section for additional details.

The department offers combined Bachelor of Science in Mechanical Engineering (BSME)/Master of Science (with a major in Mechanical Engineering) and BSME/Master of Engineering degrees. For more detailed information, see Mechanical Engineering in the Graduate Section.

School of Engineering and Mines

B.S. IN MECHANICAL ENGINEERING

Required 136 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

1. General Education Requirements (see University GER listing).

II. The Following Curriculum:

Freshman Year | First Semester | Second Semester
--- | --- | ---
Chem 121 | General Chemistry | (3)
Chem 121L | General Chemistry Lab I | (1)
Engl 110 | College Composition I | (3)
Engl 120 | College Composition II | (3)
Engl 125 | Technical and Business Writing | (3)
Engr 101 | Graphical Communication | (3)
Engr 200 | Computer Applications in Engineering | (4)
Math 165, 166 | Calculus I, II | (2)
Math 265 | Calculus III | (4)
Math 266 | Intro to Differential Equations | (3)
Mech 205 | Mechanical Design Fundamentals | (3)
Phys 252 | University Physics I | (3)
Phys 252L | University Physics Lab I | (1)
Phys 253 | University Physics II | (3)
Phys 253L | University Physics Lab II | (1)
Chem 122 | General Chemistry | (3)
Chem 122L | General Chem Lab | (1)

Junior Year

Social Science | (3)
ME 301 | Materials Science | (3)
ME 306 | Fluid Mechanics | (3)
ME 311 | Manufacturing Processes I | (3)
ME 313 | Engineering Materials | (2)
Math 321 | Applied Statistical Methods | (3)
ME 322 | Kinematics and Dynamics of Machines | (3)
ME 323 | Machine Component Design | (3)
ME 324 | Dynamic Systems Analysis | (3)
Engr 460 | Engineering Economy | (3)

Senior Year

ME 418 | Manufacturing Processes II | (3)
ME 474 | Heat & Mass Transfer | (3)
ME 480 | Mechanical Engineering Seminar | (3)
ME 483 | Mechanical Measurements Lab | (3)
ME 486 | Mechanical Engineering Practice | (3)
ME 487 | Engineering Design | (2)
ME 488 | Engineering Design | (3)
Phl 370 | Ethics in Engineering and Science (A&H) | (3)
Social Science | (3)
ME Electives | (3)

TECHNICAL ELECTIVES:

ME 418 | Advanced Manufacturing Processes | (3)
ME 4268 | Mechanical Vibrations | (3)
ME 429 | Introduction to Finite Element Analysis | (3)
ME 4468 | Gas Turbines | (3)
ME 449 | Internal Combustion Engines | (3)
ME 451 | Heating and Air Conditioning | (3)
ME 4648 | Computational Fluid Dynamics | (3)
ME 4768 | Intermediate Fluid Mechanics | (3)
ME 490 | Special Laboratory Problems | (3)
ME 514 | Processing of Advanced Materials | (3)
ME 525 | Advanced Machine Design | (3)
ME 5268 | Advanced Vibrations | (3)
ME 5298 | Advanced Finite Element Methods | (3)
ME 541 | Advanced Thermodynamics | (3)
ME 545 | Fluidized-Bed Combustion | (3)
ME 5748 | Advanced Heat Transfer | (3)
ME 590 | Special Topics | (3)

* Some of the following courses may be waived by completing Engr 100 — Professional Assessment Evaluation. Engr 101, Engr 200, ME 201, and ME 480. Phl 370 may also be waived, but not the University’s GER (For Engr 100 course description, see Engineering listing).
Aerospace Concentration: Requires 141 hours

Students completing the above curriculum with the following modifications will be deemed to hold a B.S. in Mechanical Engineering with an Aerospace Concentration.

1. Completion of Avit 102, Introduction to Aviation, 3 credits. This course includes earning a private pilot license and is recommended for the summer session between the freshman and sophomore years.**

2. The requirement of ME 418 will be replaced by a requirement for ME 429 (normally a technical elective).

3. Technical electives must be chosen from the aerospace group of electives as identified by a # in the above technical elective listing. An ME 490 or an ME 590 may also be included in the aerospace group at the discretion of the Mechanical Engineering Chair.

** Students already holding a private pilot license may earn a commercial license or an acceptable advanced rating through UND as a substitute for Avit 102.

Courses

203. Mechanical Design Fundamentals. 3 credits. Prerequisite: Engr 101. Corequisite: Phys 251 or Engr 201. Academic career plan; computational aids to engineering, shop familiarization, analysis of a machine or system, specification, writing and design of a simple machine or system. F

290. Special Laboratory Problems. 1 to 3 credits. Repeatable to a maximum of 6 credits. Consent of instructor. Laboratory investigations of interest to student and faculty. On demand.

301. Materials Science. 3 credits. Prerequisites: Chem 121, Phys 252. The theory of the structure of matter, the prediction and evaluation of engineering properties of materials. F

306. Fluid Mechanics. 3 credits. Prerequisites: Phys 251, Math 265. Fluid properties, fluid statics and dynamics, transport theory and transport analogies; conservation of mass, energy, and momentum; dimensional analysis, boundary layer concepts, pipe flows, compressible flow, open channel flow. F,S

311. Manufacturing Processes I. 3 credits. Prerequisites: ME 301 and Engr 203. Descriptive and analytical study of manufacturing processes and economics as they pertain to casting, welding and forming processes. Includes lab. S

313. Engineering Materials. 2 credits. Prerequisite: ME 301. Relationships between materials, manufacturer and design of engineering components. S

322. Kinematics and Dynamics of Machines. 3 credits. Prerequisite: Engr 101, 200, 202. Analytical and graphical study of motion, velocities, accelerations and forces for design of machine elements such as linkages, cams and gears. F

323. Machine Component Design. 3 credits. Prerequisite: Engr 203, ME 122. Design and analysis of machine elements such as shafts, bearings, gears, clutches, springs, and threaded components. Analysis of stress, strain, and deflection including irregular beams and Castigliano's theorem. Study of failure theories, fatigue failure, and surface damage. Design of bolted, riveted, welded, and bonded joints. Includes laboratory. S

324. Dynamic Systems Analysis. 3 credits. Prerequisites: Math 266, Engr 202. Study of single degree-of-freedom systems, multi-degree-of-freedom systems, continuous systems, feedback control system, stability control actions, block diagrams, computer simulation. S

341. Thermodynamics. 3 credits. Prerequisites: Phys 251, Math 166. Fundamental concepts of thermal energy relationships, processes and cycles. S,S

342. Thermodynamics. 3 credits. Prerequisite: ME 341. Real vapors, gas-vapor mixtures, power and refrigeration cycles. S

397. Cooperative Education. 1-3 credits repeatable to 12. Prerequisite: Eligible for admission to the mechanical engineering degree program. A practical work experience with an employer closely associated with the student's academic area. Arranged by mutual agreement among student, department and employer. S/U grading only. F,S,S

416. Advanced Manufacturing Processes. 3 credits. Prerequisite: ME 418. Individual projects involving the manufacturing economics and flow charts for selected products and basic technical principles of manufacturing processes. Includes laboratory. On Demand.

418. Manufacturing Processes II. 3 credits. Prerequisite: ME 313. Descriptive and analytical study of manufacturing methods and economics as they pertain to machining, metrology and automation. Includes laboratory. F

426. Noise and Vibrations. 3 credits. Prerequisite: ME 324. Vibration analysis and design as it applies to single and multi degree freedom mechanical systems, isolation and absorption of vibration, vibration of continuous systems, numerical methods of solution. On Demand.

429. Introduction to Finite Element Analysis. 3 credits. Prerequisite: Engr 202. Finite element analysis is introduced as a design tool. Emphasis is given to modeling techniques and element types. Matrix and energy methods are also introduced. On Demand.


464. Computational Fluid Dynamics. 3 credits. Prerequisites: ME 306 and Math 266. Provides a practical experience using computational fluid dynamics and provides supporting material in fluid dynamics, which is useful in understanding the need to resolve grids in boundary layers and other regions of high velocity gradients. The course is structured as half lecture and half laboratory. The lecture covers topics related to laminar and turbulence boundary layers with and without acceleration, turbulence modeling, wakes and jets. The laboratory provides experience in building grids using the program GAMBIT, the solid/fluid modeling and meshing program, and calculating solutions using Fluent, a commercial flow solver.

474. Fundamentals of Heat & Mass Transfer. 3 credits. Prerequisites: Math 266, ME 306 and 341. Convection, conduction, radiation, dimensional analysis and design of heat transfer equipment. F


480. Mechanical Engineering Seminar. 3 credits. Prerequisite: Senior standing. Reports and discussions on current developments in mechanical engineering. F

483. Mechanical Measurements Laboratory. 3 credits. Prerequisite: EE 206. Experiments and written reports on the operation and performance of instruments and basic mechanical engineering equipment. F

486. Mechanical Engineering Practice. 3 credits. Prerequisites: ME 483. Continuation of ME 483 with emphasis shifted to instrumentation, operation, and analysis of mechanical equipment and processes. S

487. Engineering Design. 2 credits. Prerequisites: ME 323, 342, Corequisites: Engr 460, ME 474, 483. The first course of a 2 course sequence in Engineering Design, establish concepts and important features of the machine or system, do market analysis, establish design objectives, explore alternatives, conduct research, specify constraints. F

488. Engineering Design. 3 credits. Prerequisites: ME 487. Systematic study and practice essential to the optimal design of a complete machine or system, utilizing economic and social constraints together with current mechanical and thermal design techniques. The course is a continuation of ME 487 taken the preceding semesters. S

489. Senior Honors Thesis. 1 to 8 credits; total not to exceed 9. Prerequisite: consent of the Department and approval of the Honors Committee. Supervised independent study culminating in a thesis. F,S

490. Special Laboratory Problems. 1 to 3 credits. Repeatable to maximum of 6 credits. Prerequisite: Consent of instructor. Laboratory investigations of interest to students and faculty. On Demand.

Medicine (Med)

100. Introduction to Health Sciences Professions. 1 credit. Introduction to the roles, ethics, certification, education, employment and fundamental knowledge and skills related to the health science professions. S/U grading only. F

Microbiology and Immunology (MBio)

Melvold (Chair), Bradley, Flower, Hill, Nilles, Sailer and Young

202. Introductory Medical Microbiology Lecture. 3 credits. Prerequisite: Chem 121 or 116. Three hours lecture per week. An introductory medical microbiology course primarily for preclinical lab science students but open to allied health students with permission of the instructor. This course provides a background in all aspects of microbial agents and disease. F

202L. Introductory Medical Microbiology Laboratory. 2 credits. Prerequisite: Chem 121 or 116. Corequisite: MBio 202. Four hours laboratory per week. An intro-
Military Science (MSci)
Oseoles (Chair), Fugere, Kapocius, Rood and Wheatley

The Army Reserve Officer Training Corps (ROTC) offers a program of instruction designed to mold young men and women into responsible, self-disciplined citizens and leaders. Students seeking a commission as a second lieutenant in the United States Army can expect to learn and develop the following skills: time management, oral and written communication, leadership, management, problem solving and decision making. Selection for active duty and for commissioning as an Army officer is competitive. Students commissioned as reserve officers may request active duty or may serve with the Army Reserve or National Guard after a short period of active duty for officer training. The program is voluntary and is open to both male and female students. Enrollment in Military Science I (freshman year) entails no military service obligation. This offers the student an opportunity to explore military science subjects and is a basis upon which to decide about further enrollment in military science including entering competition for an ROTC scholarship. Winners of three or four year ROTC scholarships incur a military obligation when they enter their MS II (sophomore) year. Other students incur no obligation until their MS III (junior) year. Successful completion of MS I and MS II is a prerequisite to enrollment in MS III and MS IV; however, placement credit procedures are available for veterans, Junior ROTC participants, and transfer students formerly enrolled in other ROTC programs, or by completion of a summer Leadership Training Camp (LTC). Direct questions concerning placement eligibility to the Department of Military Science. Financial assistance is available in the form of two, three, and four year ROTC scholarships and Helicopter Flight Training Program scholarships. These scholarships pay tuition, laboratory fees, a flat rate for textbooks and a monthly stipend. All ROTC scholarship students and each non-scholarship junior and senior are paid a graduated stipend. The advance course may be taken for credit only by non-obligated students with prior arrangement through the Department of Military Science. The Department of Military Science is housed in the University Armory which contains a library, physical fitness center, computer lab, and a rifle range for the use of enrolled students.

Professional Military Education—Requirements:

In addition to successfully completing the ROTC curriculum and earning a baccalaureate degree a cadet must complete at least one undergraduate course from each of three designated fields of study to meet the requirements for commissioning. Usually, meeting the general university requirements and specific major area requirements will satisfy most of the Professional Military Educational requirements. Specifically, cadets must take a course in communication skills (written and oral), American military history, and computer literacy.

MINOR IN MILITARY SCIENCE

Required 29 credits, including:

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MSci 301</td>
<td>Military Science III</td>
<td>(3)</td>
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<tr>
<td>MSci 301 LAB</td>
<td>Military Science Lab</td>
<td>(1)</td>
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<tr>
<td>MSci 302</td>
<td>Military Science III</td>
<td>(3)</td>
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<td>MSci 302 LAB</td>
<td>Military Science Lab</td>
<td>(1)</td>
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<tr>
<td>MSci 341</td>
<td>Military Phy Conditioning</td>
<td>(1)</td>
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<tr>
<td>MSci 342</td>
<td>Military Phy Conditioning</td>
<td>(1)</td>
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<tr>
<td>MSci 401</td>
<td>Military Science IV</td>
<td>(3)</td>
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<tr>
<td>MSci 401 LAB</td>
<td>Military Science Lab</td>
<td>(1)</td>
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<tr>
<td>MSci 402</td>
<td>Military Science IV</td>
<td>(3)</td>
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<td>MSci 402 LAB</td>
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<td>(1)</td>
</tr>
<tr>
<td>MSci 441</td>
<td>Military Phy Conditioning</td>
<td>(1)</td>
</tr>
<tr>
<td>MSci 442</td>
<td>Military Phy Conditioning</td>
<td>(1)</td>
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<tr>
<td>Hist 210</td>
<td>Military History</td>
<td>(3)</td>
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3 credits from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Pols 220</td>
<td>International Politics</td>
<td>(3)</td>
</tr>
<tr>
<td>Pols 225</td>
<td>Comparative Politics</td>
<td>(3)</td>
</tr>
<tr>
<td>Hist 209</td>
<td>World War II</td>
<td>(3)</td>
</tr>
<tr>
<td>Hist 335</td>
<td>Nuclear Weapons and the Modern Age</td>
<td>(3)</td>
</tr>
<tr>
<td>Hist 339</td>
<td>The United States and Vietnam, 1945-1975</td>
<td>(3)</td>
</tr>
<tr>
<td>Hist 412</td>
<td>U.S. Foreign Relations Since 1900</td>
<td>(3)</td>
</tr>
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3 hours from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Comm 212.</td>
<td>Interpersonal Communication</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 300</td>
<td>Principles of Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 305</td>
<td>Managerial Concepts and Interpersonal Skills</td>
<td>(3)</td>
</tr>
<tr>
<td>Nurs 478</td>
<td>Leadership and Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Phil 370</td>
<td>Ethics in Science and Engineering</td>
<td>(3)</td>
</tr>
<tr>
<td>ISys 217</td>
<td>Fundamentals of Management Information Systems</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Courses

101. Military Science I. 2 credits. Make your first new peer group at college one committed to performing well and enjoying the experience. Increase self-confidence through team and individual group activities. Includes basic drill, physical fitness, rappelling, leadership reaction course, and basic marksmanship. Learn fundamental concepts of leadership in both a classroom and outdoor laboratory environment. Participation in a weekend exercise is optional. F

101L. Leadership Lab. 1 credit. Corequisite: MSci 101. An introduction to individual and team aspects of military tactics in small unit operations. Includes basic drill and ceremony, marksmanship training and fundamental concepts of leadership. F,S

102. Military Science I. 2 credits. Learn and apply the principles of effective leadership. Reinforce self-confidence through participation in physically challenging exercises with upper division ROTC students. Develop oral and written communication skills that will improve individual and group interaction. Develop skills in land navigation, and radio communications. S

102L. Leadership Lab. 1 credit. Corequisite: MSci 102. An introduction to individual and team aspects of military tactics in small unit operations. Includes operation order writing, team level movement techniques, and follow-up leadership. S

201. Military Science II. 2 credits. Learn/apply ethics-based leadership skills that develop individual abilities and contribute to the building of effective teams of people. Develop skills in oral presentations, writing concisely, planning of events, coordination of group efforts, land navigation and basic military tactics. Learn fundamentals of ROTC’s Leadership Assessment Program. F

201L. Leadership Lab. 1 credit. Corequisites: MSci 201, 241. Learn and apply the principles of effective leadership. Reinforce self-confidence. Includes drill and ceremony, weapon qualification and leadership principles. S

202. Military Science II. 2 credits. Introduction to individual and team aspects of military tactics in small unit operations. Includes use of radio communications, making safety assessments, movement techniques, planning for team safety/security and methods of pre-execution checks. Practical exercises with upper division ROTC students. Learn techniques for training others as an aspect of continued leadership development. S

202L. Leadership Lab. 1 credit. Corequisites: MSci 202, 242. Learn and apply the principles of effective leadership. Reinforce self-confidence. Includes small unit tactics, land navigation and PLC (Field Leadership reaction course). S

215. Conflict Simulation. 1 credit. A course analyzing military strategy and tactics through the use of war gaming activities based upon historical renderings. F,S
241. Military Physical Conditioning. 1 credit. Corequisites: MSci 201, 201L. Building on concepts of the 100 level class, emphasizing on the Army components of physical fitness; cardiorespiratory endurance; muscular strength; muscular endurance; flexibility and body composition. A key objective is for each student to achieve a minimum score of 275 points total, in the three events of the Army Personal Fitness Test (APFT): pushups, sit-ups, and a timed two-mile run. F

242. Military Physical Conditioning. 1 credit. Corequisites: MSci 202, 202L. Combination of 201 with emphasis on leadership of a squad during physical training, supervising each individual’s correct performance of stretching and calisthenics, as well as following assigned students progress and taking responsibility for mentoring subordinates. A key objective is for each student to achieve a minimum score of 250 points total, in the three events of the Army Physical Fitness Test (APFT): pushups, sit-ups, and a timed two-mile run. S

290. ROTC Basic Course. 4 credits. A course designed to qualify students not participating in the Military Science I and II programs for entry into the ROTC Advanced Course. Course includes those subjects presented in Msci 101, 102, 201, and 202.

301. Military Science III. 3 credits. Prerequisite: ROTC Basic Course or advanced placement credit. Series of practical opportunities in leadership and problem solving used to lead small groups, receive personal assessments and encouragement, and lead again in situations of increasing complexity. Uses small unit tactics and opportunities to plan and conduct training for lower division students both to develop such skills and as vehicles for practicing leadership skills. Three hours and a required leadership lab. MSci 301L, plus required participation in three one-hour sessions for physical fitness. Participation in one weekend exercise is also required, and one or two more weekend exercises may be offered for optional participation. F

301L. Leadership Lab. 1 credit. Corequisites: MSci 301 and 341. Series of practical opportunities to lead small groups, receive personal assessments. Use small unit tactics and opportunities to plan and conduct training for lower division students. F

302. Military Science III. 3 credits. Prerequisite: same as MSci 301. Continues methodology of MSci 301: Analyze tasks; prepare written or oral guidance for team members to accomplish tasks. Delegate tasks and supervise. Plan for and adapt to the unexpected in organizations under stress. Examine and apply lessons from leadership case studies. Examine importance of ethical decision making in setting a positive climate that enhances team performance. Three hours and a required leadership lab. MSci 302L, plus required participation in two three-hour sessions for physical fitness. Participation in one weekend exercise is required; two other weekend exercises option. S

302L. Leadership Lab. 1 credit. Series of practical opportunities to lead small groups, receive personal assessments. Use small unit tactics and opportunities to plan and conduct training for lower division students. Preparation for Army ROTC National Advanced Leaders Course (NALC) at Ft. Lewis, Washington in the summer. S

341. Military Phsy Conditioning. 1 credit. Corequisites: MSci 301 and 301L. Instruction in leadership of a company sized element and the phases of fitness conditioning, preparatory conditioning, and maintenance. A key objective is for each student to achieve a minimum score of 260 points total, in the three events of the Army Personal Fitness Test (APFT): pushups, sit-ups, and a timed two-mile run. F

342. Military Phsy Conditioning. 1 credit. Corequisites: MSci 302, 302L. Combination of 341 with instruction on leadership of a company sized element and the phases of fitness conditioning, preparatory conditioning, and maintenance. A key objective is for each student to achieve a minimum score of 260 points total, in the three events of the Army Personal Fitness Test (APFT): pushups, sit-ups, and a timed two-mile run. F

401. Military Science IV. 3 credits. Prerequisite: MSci 301, 302. Corequisites: MSci 401L, 441. Instruction in organization and function of a military staff; communication skills, counseling, problem solving, and leader development. Course includes leadership laboratories and field exercises. F

401L. Leadership Lab. 1 credit. Corequisites: MSci 401, 441. A culmination of all the concepts learned in the previous classes with emphasis on writing operation orders for company level and higher. Responsible for all Army ROTC Cadet Battalion training involving a series of practical exercises and evaluation of training. F

402. Military Science IV. 3 credits. Prerequisite: MSci 301, 302. Corequisites: MSci 402L, 442. Instruction in leadership ethics, foundations of military law, personnel issues, management and morals. Course includes leadership laboratories and field exercises. S

402L. Leadership Lab. 1 credit. A culmination of all the concepts learned in the previous classes with emphasis on writing operation orders for company level and higher. Responsible for all Army ROTC Cadet Battalion training involving a series of practical exercises and evaluation of training. S

501. Military Physical Conditioning. 1 credit. Corequisites: MSci 401, 401L. Putting together all of the personal fitness concepts learned in the previous classes with emphasis on leadership of a battalion sized organization, including planning and coordination of all physical fitness for the ROTC Battalion and evaluation of the personal fitness training and trainers. Coordination of individual training specific to fitness ends. An essential objective for each student is to achieve a minimum score of 275 points total, in the three events of the Army Physical Fitness Test (APFT): pushups, sit-ups, and a timed two-mile run. F

542. Military Physical Conditioning. 1 credit. Corequisites: MSci 402, 402L. Combination of 441 with emphasis on grabbing the Army’s policy on physical fitness, fitness maintenance, and safety. Become familiar with Army regulations and forms per-
Ensemble participation is a component of each of the degree programs offered within the department. Normally, students in the Bachelor of Music program participate in an ensemble each semester of residence except for the semester of student teaching. For Music Education students this should be the large ensemble of their major instrumental or vocal area. The number of ensemble credits for each degree is listed below. More information about the ensemble requirement for each degree program can be found in the Department of Music Undergraduate Handbook available in the department office.

Individual Applied Music Lessons are an essential part of all Music degrees. The number of applied lesson credits for each degree is listed below. Individual lessons and ensembles may be repeated for credit without limitation. A maximum of 12 hours of credit in ensembles, however, may apply for graduation.

The Bachelor of Music degree program offers majors in Performance, Music Education, and Music Therapy. The Performance major is designed for the student who wishes to pursue a career in performance and who has the ability and commitment to achieve that goal. Students desiring admittance into the applied lesson sequence for performance majors (Musc 155, 255, 355, 455) must present a formal audition before the appropriate applied faculty. Students accepted for this program must demonstrate exceptional potential for performance excellence. The Performance student is expected to pass a qualifying jury examination on the major instrument or voice by the end of the second year, to present a shared recital during the third year, and to present a full recital during the fourth year.

The Music Education major is designed for the student who wishes to become a music teacher in the elementary and secondary schools and is intended to develop the requisite knowledge, performance, and teaching abilities needed to function as a professional music educator. The student will select either an instrumental or vocal/general emphasis, culminating in the presentation of a half recital. The successful completion of this program will qualify the student for state licensure in instrumental, choral, and general music, grades K-12.

The Music Therapy major is a competency-based program, which includes both academic and clinical work, culminating in an American Music Therapy Association approved internship. Academic requirements include courses in Sociology and Psychology as well as Music and Music Therapy courses. Clinical requirements include four levels of practicum in a variety of community settings under the guidance of a music therapist in cooperation with community clinicians. The program is designed to produce highly skilled and broadly based music therapists who will meet the requirements for accreditation by the American Music Therapy Association.

The Bachelor of Arts degree program in music is designed for the student who wishes a general liberal arts education with emphasis in music. Along with a broad coverage of the discipline, the student selects an area of concentration, e.g., music history, music theory, music technology, composition, culminating in a final project. In addition to examinations in traditional classroom courses, student progress in Applied Lessons is evaluated every semester through Applied Music jury examinations. Assessment of progress towards degree also includes a fourth-semester mid-program review, and a pre-graduation review. Music Education students must complete a portfolio review as required by the Department of Teaching and Learning.

A Department of Music Student Handbook is available to students as a supplement to this catalog. That volume includes the most recent updates of policies and procedures and may supersede information presented here.

**College of Arts and Sciences**

**BACHELOR OF MUSIC WITH A MAJOR IN PERFORMANCE**

Required 132 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

**I. General Education Requirements (see University GER listing).**

**II. The Following Curriculum**

<table>
<thead>
<tr>
<th>Core Courses</th>
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<tbody>
<tr>
<td>Musc 130, 134, 230, 234 Harmony and Theory Sequence</td>
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<td>Musc 131, 135, 231, 235 Aural Skills Sequence</td>
</tr>
<tr>
<td>Musc 203 Popular and Classical Musics of the World</td>
</tr>
<tr>
<td>Musc 310, 311 Music History Survey I, II</td>
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<tr>
<td>Musc 490 Seminar in Music</td>
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<tr>
<td>Musc 256 Basic Conducting</td>
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<tr>
<th>Performance Courses</th>
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</thead>
<tbody>
<tr>
<td>Major Instrument</td>
</tr>
<tr>
<td>Secondary Instrument (may include Keyboard Skills Sequence; Keyboard only: Musc 414, Piano Literature)</td>
</tr>
<tr>
<td>Musc 444 Applied Music Pedagogy</td>
</tr>
<tr>
<td>Musc 459 Senior Recital</td>
</tr>
<tr>
<td>Piano Proficiency through Level III or Musc 133, 136, 233, 236 Keyboard Skills Sequence</td>
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<tr>
<th>Electives</th>
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<tr>
<td>Electives in disciplines other than the major</td>
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<tr>
<th>Instrumental Majors</th>
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</thead>
<tbody>
<tr>
<td>Musc 242 Diction for Singers</td>
</tr>
<tr>
<td>Musc 269 Opera Workshop</td>
</tr>
<tr>
<td>Ensembles, large and small</td>
</tr>
<tr>
<td>History, Literature, Theory and Composition</td>
</tr>
<tr>
<td>Musc 415 Song Literature</td>
</tr>
<tr>
<td>Electives</td>
</tr>
<tr>
<td>Foreign Language Requirement French 101, 102 or German 101, 102 or Italian 101, 102</td>
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<tr>
<td>Other Electives Electives in disciplines other than the major</td>
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<thead>
<tr>
<th>Instrumental Majors</th>
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<tbody>
<tr>
<td>Musc 310, 311 Music History Survey I, II</td>
</tr>
<tr>
<td>Musc 490 Seminar in Music</td>
</tr>
<tr>
<td>Musc 423 Instrumental and Choral Arranging</td>
</tr>
<tr>
<td>Electives</td>
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<tr>
<td>Other Electives Other than Performance</td>
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<tr>
<td>Electives Electives in disciplines other than the major</td>
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</tbody>
</table>

**BACHELOR OF MUSIC WITH A MAJOR IN MUSIC EDUCATION**

(Instrumental or Choral Emphasis)

Required 129 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

**I. General Education Requirements (see University GER listing).**

**II. The Following Curriculum**

<table>
<thead>
<tr>
<th>Core Courses</th>
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<tbody>
<tr>
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<tr>
<td>Musc 131, 135, 231, 235 Aural Skills Sequence</td>
</tr>
<tr>
<td>Musc 203 Popular and Classical Musics of the World</td>
</tr>
<tr>
<td>Musc 310 and 311 Music History Survey I and II</td>
</tr>
<tr>
<td>Musc 256 Basic Conducting</td>
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<tr>
<td>Piano Proficiency through Level III or Musc 133, 136, 233, 236 Keyboard Skills Sequence</td>
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<tr>
<th>Electives</th>
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<tr>
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<tr>
<th>Instrumental Emphasis</th>
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<tbody>
<tr>
<td>Musc 423 Instrumental and Choral Arranging</td>
</tr>
<tr>
<td>Musc 427 Analysis of Musical Form</td>
</tr>
<tr>
<td>Musc 417 Instrumental Literature</td>
</tr>
<tr>
<td>Performance Major Instrument</td>
</tr>
<tr>
<td>Major Instrumental Ensemble</td>
</tr>
<tr>
<td>Piano as a secondary instrument (may include Keyboard Skills Sequence: Musc 133, 136, 233, 236)</td>
</tr>
</tbody>
</table>
Music 357, 358 ...........Choral, Instrumental Conducting .........................(4)
Music 459 .............Senior Recital ..........................................................(1)
Music Education
Music 140 .............Methods: Woodwinds, Brass, Strings, Perussion ........(5)
Music 446 .............Instrumental Classroom Methods and Materials ....(3)
Music Technology
Music 340 .............Introduction to Music Technology (Credits apply toward T&L 390). (2)

**VOCAL/CHORAL EMPHASIS**

Other studies
Music 423 .............Instrumental and Choral Arranging ..........................(2)
Music 427 .............Analysis of Musical Form .......................................(2)
Music 416 .............Choral Literature .....................................................(2)

Performance
Major Instrument ...............................................................(7)
Major Choral Ensemble .........................................................(7)
Voice or Piano as a secondary instrument (may include Keyboard) ....(2)
Skills Sequence: Music 133, 136, 233, 236 ....................................(4)
Music 357, 358 ...........Choral, Instrumental Conducting .........................(4)
Music 459 .............Senior Recital ..........................................................(1)
Music Education
Music 140 .............Methods: Woodwinds, Brass, Strings, Perussion ........(4)
Music 242 .............Diction for Singers ....................................................(1)
Music 445 .............Choral Methods .........................................................(3)
Music Technology
Music 340 .............Introduction to Music Technology (Credits apply toward T&L 390). (2)

**PROFESSIONAL EDUCATION**

T&L 325, 345, 390 (or Music 340), T&L 350 (or 252), 400, 425, 433, T&L 480, 486, 487 (See advisor for clarification.)

**BACHELOR OF MUSIC WITH A MAJOR IN MUSIC THERAPY**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GIER listing).
II. The Following Curriculum:
   Core Courses
   Music 130, 134, 230, 234, Harmony and Theory Sequence ..............(12)
   Music 131, 135, 231, 235, Aural Skills Sequence ..............................(4)
   Music 203 .............Popular and Classical Musics of the World ..........(3)
   Music 310, 311 ...........Music History Survey I, II .................................(6)
   Music 490 .............Seminar in Music ..................................................(3)

   Supporting Courses in Music:
   Applied lessons (one instrument or voice) ........................................(8)
   Music 150, 151 ...........Class Lessons: Voice ...........................................(2)
   Music 150, 151 ...........Class Lessons: Voice ...........................................(2)
   Music 140, 399 ...........Methods: Percussion, Jazz Improvisation .......(4)
   Piano Proficiency through Level III or Music 133, 136, 233, 236 ......(4)
   Keyboard Skills Sequence ...................................................................(4)
   Major Ensembles (at least three different) ...........................................(6)
   Music 256 .............Basic Conducting .....................................................(2)
   Music 423 .............Instrumental and Choral Arranging ..................(2)
   Music 340 .............Intro to Music Technology .....................................(2)

   Music Therapy Courses
   Music 180 .............Intro to Music Therapy ...........................................(3)
   Music 280 .............Music Therapy Theory and Methods I ...................(3)
   Music 281 .............Music Therapy Techniques I .................................(2)
   Music 380 .............Music Therapy Theory and Methods II .................(3)
   Music 381 .............Music Therapy Techniques II .................................(2)
   Music 382 .............Music Therapy Practicum II ................................(1)
   Music 383 .............Music Therapy Practicum III ................................(1)
   Music 480 .............Psychology Foundations of Music Learning ..........(3)
   Music 481 .............Music Therapy Practicum IV .................................(1)
   Music 497 .............Music Therapy Internship .....................................(3)

   Additional Required Courses
   Psy 111 .............Introduction to Psychology .....................................(3)
   Psy 250 .............Developmental Psychology .....................................(3)
   Psy 270 .............Abnormal Psychology ...............................................(3)
   T&L 315 .............Education of Exceptional Children ..............................(3)
   Soc 212.............Sociological Statistics .................................................(3)

   General Electives (chosen in consultation with advisor) .......................(6)

**BACHELOR OF ARTS WITH A MAJOR IN MUSIC**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GIER listing).
II. The Following Curriculum:
   Core Courses
   Music 130, 134, 230, 234, Harmony and Theory Sequence ..............(12)
   Music 131, 135, 231, 235, Aural Skills Sequence ..............................(4)
   Music 203 .............Popular and Classical Musics of the World ..........(3)
   Music 310, 311 ...........Music History Survey I, II .................................(6)
   Music 490 .............Seminar in Music ..................................................(3)
   Piano Proficiency Level I or Music 133 ... Keyboard Skills I ..........(1)

   Other Supportive Courses
   Performance (one instrument or voice) ..............................................(4)
   Major Ensemble ...............................................................................(4)
   Electives in Theory/Comp., History/Lit., Conducting or Applied ....(7)
   Music 492 .............Senior Project .........................................................(2)

   Requires in other departments:
   Foreign language ............................................................................(16)
   Level IV proficiency in a foreign language (preferably French, German, or Italian).

   Eighteen credits of the required 125 must be in disciplines other than the major (in addition to University general education and language requirements).

**MINOR IN MUSIC**

Required 21 credits

Music 100 .............Introduction to the Understanding of Music (May be waived by examination) ...................(3)

   Core Courses
   Music 130, 134, First-Year Harmony and Theory ................................(6)
   Music 131, 135, First-Year Aural Skills .............................................(2)
   Music 310 or 311, Music History Survey I or II .................................(3)

   Additional Courses in Music
   Performance (Applied Music, Conducting, Ensembles) ......................(4)
   Electives in History/Literature/Theory/Composition ............................(6)

   (May include, but not limited to, other courses in Music
   Major Core, such as 203, 230, 234, 310, 311)

**College of Education and Human Development**

**MINOR IN MUSIC**

Required 23 credits

Music 100 .............Introduction to the Understanding of Music (May be waived by examination) ...................(3)

   Core Courses
   Music 130, 134, First-Year Harmony and Theory ................................(6)
   Music 131, 135, First-Year Aural Skills .............................................(2)
   Music 256, Basic Conducting .............................................................(2)
   Music 310 or 311, Music History Survey I, II .....................................(3)

   Additional Courses
   Applied Music ....................................................................................(3)
   Ensembles .........................................................................................(2)
   T&L 426 .............Elem Music Methods and Materials ..............................(3)

**Courses**

100. Introduction to the Understanding of Music, 3 credits. Introduction of elements, genres, media, and historical and stylistic periods of music. Designed for the non-music major. Fulfills humanities credit. F.S.

101. Fundamentals of Music, 3 credits. Introduction to fundamental elements of music through the study of scales, chords, basic harmonic progressions, rhythms, and terminology. F.S.

309. Special Topics, 1 to 3 credits. Consent of instructor required. Specialized seminars in courses on variable topics not covered by regular departmental offerings. May be repeated for credit up to 6 hours. F.S.

399. Seminar in Music, 3 credits. Prerequisites: Junior standing, Music 330 and 311. A seminar on various topics in the history and literature of music. Final project will consist of a 15-20 page research paper. Repeatable when topics vary. On demand.

491. Seminar, 3 credits. Prerequisite: Consent of instructor. On Demand.

492. Senior Project, 2 credits. Prerequisite: Senior standing. Presentation of a recital, research paper, original composition, or similar project that meets the approval of the department. F.S.

494. Special Projects, 1 to 3 credits. Individual study in an approved area of interest to the student. May be repeated for credit up to 8 hours. F.S.
Music Theory and Composition

130. Diatonic Harmony. 3 credits. The study of diatonic harmonic and melodic principles of Western European music from 1600 to 1900. Topics include harmonic progressions, melodic patterns, rhythm, and voice leading. Material is learned through part writing, keyboard skills, and music analysis. F

131. Aural Skills I. 1 credit. prerequisite: Musc 130. Training in reading at sight and in aural recognition involving dictation, keyboard, and singing skills. F

133. Keyboard Skills I. 1 credit. Beginning classroom instruction in keyboard. F

134. Chromatic Harmony I. 3 credits. prerequisite: Musc 130. The introduction of chromatic materials into diatonic material learned in Musc 130. Topics include non-chord tones, altered chords, and modulation. Material is learned through part writing, keyboard skills, and music analysis. S

135. Aural Skills II. 1 credit. prerequisite: Musc 131. Corequisite: Musc 134. Training in reading at sight and in aural recognition involving dictation, keyboard, and singing skills. S


230. Chromatic Harmony II. 3 credits. prerequisite: Musc 133, plus 134 and 135 or permission of instructor. The continued study of chromatic materials covered in Musc 134. Material is learned through part writing, keyboard skills, and music analysis. F

231. Advanced Aural Skills. 1 credit. prerequisite: Musc 135. Continuation of the development of sight reading and aural recognition skills including music dictation. F

233. Keyboard Skills III. 1 credit. prerequisite: Musc 136. Continuation of the development of fundamental piano skills with emphasis on the improvement of keyboard technique and repertoire. F

234. Music Theory since 1900. 3 credits. prerequisite: Musc 230, 231. MUSIC thought, techniques, and theories of the 20th century and beyond. Material is learned through musical analysis and original compositions. S

235. Advanced Aural Skills II. 1 credit. prerequisite: Musc 231. Continuation of the development of sight reading and aural recognition skills including music dictation. S

236. Keyboard Skills IV. 1 credit. prerequisite: Musc 233. Continuation of the development of fundamental piano skills with emphasis on the improvement of keyboard technique and repertoire. S

423. Instrumental and Choral Arranging. 2 credits. prerequisite: Musc 134. Scoring techniques for instrumental and vocal ensembles, including band, orchestra, jazz ensemble, choir and children’s chorus. Specific areas of focus to be determined by abilities and interests of the students. S


429. Composition. 2 credits (repeatable). prerequisite: Musc 134. Original composition in smaller forms for vocal and instrumental solos and ensembles. F/S

Music History and Literature

200. Music in America. 3 credits. A historical survey of music in America from pre-colonial times through the twentieth century, including Classical, Ethnic, Folk, and Popular Traditions. Designed for non-majors; will include listening techniques and writing about music. On Demand.

203. Popular and Classical Musics of the World. 3 credits. A study of the music of different cultures of the world, and how oral traditions in the United States and around the world have been passed on. S

276. Collegium Musicum. 1 to 4 credits not to exceed 1 credit per semester. Study and performance of vocal and instrumental music of the Medieval, Renaissance, and Baroque eras and other selected compositions which are rarely performed. On Demand.

310. Music History Survey I. 3 credits. prerequisite: Musc 134 or instructor’s permission. A historical survey of western art music from Ancient Times to 1650. F

311. Music History Survey II. 3 credits. prerequisite: Musc 133 and 134 or permission of the instructor. A historical survey of western art music from 1650 to the present. S

410. Piano Literature. 3 credits. prerequisite: Musc 354 or 355. Piano, or consent of the instructor. Study and analysis of keyboard music from the Baroque period to the present. F

411. String Literature. 3 credits. prerequisite: Musc 254 or 255. Voice: Representative song literature of Italy, France, Germany, England, Russia, Norway, Sweden, and America. On Demand.

416. Choral Literature. 2 credits. prerequisite: 3 hours of Music History and Literature. Choral literature from the Renaissance to the present with particular attention given to the representative compositions in both large and small forms. F

417. Instrumental Literature. 2 credits. Wind instrument literature from the Renaissance to the present with particular attention given to the representative compositions in both large and small forms. F

Music Therapy

180. Introduction to Music Therapy. 3 credits. An overview of the field of music therapy, an introduction to the history and principles of music therapy, to different therapy models and techniques, and to the many populations served by the discipline. This course is open to all students and professionals interested in learning more about the field. S


281. Music Therapy Techniques I. 2 credits. prerequisite: Musc 180. Students will work on developing musical skills and techniques for the design and implementation of music therapy activities in a variety of clinical settings. S

282. Music Therapy Practicum I (Children). 1 credit. prerequisite: Musc 180. Corequisite: Musc 281. Supervised field experience in music therapy with special needs children. The student will co-lead music therapy groups for special needs children. In addition to field placement, the student must attend a weekly on-campus seminar. F-S

380. Music Therapy Theories and Methods II (Adults). 3 credits. prerequisite: Musc 280. In-depth demonstration, analysis and comparison of specific music therapy models, a study of the theories, methods and techniques associated with these models, with special emphasis on the treatment of adults. S

381. Music Therapy Techniques II. 2 credits. prerequisite: Musc 281. Students will work on developing musical skills and techniques for the design and implementation of music therapy activities in a variety of clinical settings. F-S

382. Music Therapy Practicum II. 1 credit. prerequisite: Musc 282. Corequisite: Musc 381. Supervised field experience in music therapy with special adult populations. The student will co-lead music therapy groups and work with individual clients. In addition to field placement, the student must attend a weekly on-campus seminar. S

383. Music Therapy Practicum III. 1 credit. prerequisite: Musc 381 and 382. Supervised field experience in music therapy with special adult populations. The student will co-lead music therapy groups and work with individual clients. In addition to field placement, the student must attend a weekly on-campus seminar. F-S

477. Music Therapy Internship. 1-3 credits. prerequisite: Completion of all Music Therapy coursework. Clinical placement at an American Music Therapy Association approved facility upon the completion of all Music Therapy coursework. The internship is a degree requirement, offering the student supervised field experience under the guidance of a professional music therapist. S/U grading only. On demand.

Music Education

140. Methods: Woodwinds, Brass, Strings, Percussion. 1 credit. repeatable to 6 credits. prerequisite: Music majors and minors only. Offers music education students performance and pedagogical instruction on instruments in the brass, woodwind, string and percussion families. F

243. Music for Elementary School Teachers. 3 credits. Not open to Music Majors or Minors. Survey of elementary school music. Development of teacher's skills and knowledge emphasizing conceptual understandings and music competencies essential to the musical growth of children. F


443. Music Methods and Materials for Elementary School Teachers. 3 credits. prerequisite: Music majors and minors only. Offers music education students performance and pedagogical instruction on instruments in the brass, woodwind, string and percussion families. F

445. Choral Methods. 3 credits. F

446. Instrumental Classroom Methods and Materials. 3 credits. S

447. Jazz Techniques. 2 credits. prerequisite: Music 354. Organization of and materials appropriate for the jazz band, methods of teaching the rhythmic and tonal problems inherent in its style. On Demand.

448. Orchestra Directors’ Course. 1 credit. organizational and administrative problems of the orchestra director such as curriculum, recruiting, scheduling, programming, promotion of the string program, and literature. On Demand.

449. Music Education Special Topics. 1 to 3 credits. F

Music Performance - a. Conducting

256. Basic Conducting. 2 credits. prerequisite: Musc 133. Development of basic conducting techniques, baton technique, and use of the left hand. Reading of choral and instrumental scores. F

257. Choral Conducting. 2 credits. prerequisite: Musc 236 and 256. Conducting problems and rehearsal techniques in relation to choral literature in various styles based on score, class performance, and recordings. S
Nonprofit Leadership Certificate Program (NLCP)

H. Helgeson (Program Coordinator)

The Nonprofit Leadership Certificate is a multidisciplinary program within the College of Arts and Sciences. This program is primarily directed toward students who want to acquire skills and enhance their qualifications for service in the nonprofit sector. The Nonprofit Leadership Certificate Program is an 18-credit complement to any major area of study. The certificate will develop students’ competencies in understanding nonprofit organizations, the role of meeting human needs, and the diversity of groups in society. Students acquire the competencies for this certificate through coursework as well as hands-on learning through service work in the community and internships with nonprofit organizations. The Nonprofit Leadership Certificate Program is accredited by American Humanics, Inc., a national organization that establishes competencies and affiliates with nonprofit leadership programs in colleges and universities.

College of Arts & Sciences

Certificate in Nonprofit Leadership

18 credits required, including:

- A&S 200...Introduction to the Nonprofit Sector... (2)
- A&S 497...Internship for Nonprofit Leadership Certificate... (6)

Other requirements (9 credits):

- Choose one: 3-credit course from each area:

  a. Organizational

      A&S 301...Accounting and Financial Concepts for Entrepreneurship... (3)
      A&S 302...Marketing and Management Concepts for Entrepreneurship... (3)
      Psy 301...Industrial and Organizational Psychology... (3)
      Mgmt 302...Human Resource Management... (3)
      Comm 303...Principles of Public Relations... (3)
      Mgmt 310...Organizational Behavior... (3)
      Comm 401...Organizational Communication... (3)
      RLS 442...Recreation Administration... (3)

  b. Service and Community

      Comm 102...Communication and the Human Community... (3)
      Soc 115...Social Problems... (3)
      Comm 212...Interpersonal Communication... (3)
      SWK 257...Human Behavior in the Social Environment... (4)
      Soc 306...Social Change... (3)
      IDS 495...Service and Citizenship... (3)
      FA 150...Introduction to Fine Arts... (3)

  c. Diversity

      Musc 203...Popular & Classical Music for the World... (3)
      IS 121...Introduction to Indian Studies... (3)
      A&S 225...Introduction to the Study of Women... (3)
      RHS 250...Contemporary Issues in Rehabilitation... (3)
      Soc 250...Diversity in American Society... (3)
      Comm 402...International/Intercultural Communication... (3)
      Psy 421...Individual and Group Differences... (3)
      Psy 465...Multicultural Psychology... (3)

  *Note: Students may “double-use” courses for this Certificate and for their majors or minors.

Courses (A&S)

- A&S 200...Introduction to the Nonprofit Sector... (2)
- A&S 497...Internship for Nonprofit Leadership Certificate... (6)

Other requirements (9 credits):

- Choose one: 3-credit course from each area:

  a. Organizational

      A&S 301...Accounting and Financial Concepts for Entrepreneurship... (3)
      A&S 302...Marketing and Management Concepts for Entrepreneurship... (3)
      Psy 301...Industrial and Organizational Psychology... (3)
      Mgmt 302...Human Resource Management... (3)
      Comm 303...Principles of Public Relations... (3)
      Mgmt 310...Organizational Behavior... (3)
      Comm 401...Organizational Communication... (3)
      RLS 442...Recreation Administration... (3)

  b. Service and Community

      Comm 102...Communication and the Human Community... (3)
      Soc 115...Social Problems... (3)
      Comm 212...Interpersonal Communication... (3)
      SWK 257...Human Behavior in the Social Environment... (4)
      Soc 306...Social Change... (3)
      IDS 495...Service and Citizenship... (3)
      FA 150...Introduction to Fine Arts... (3)

  c. Diversity

      Musc 203...Popular & Classical Music for the World... (3)
      IS 121...Introduction to Indian Studies... (3)
      A&S 225...Introduction to the Study of Women... (3)
      RHS 250...Contemporary Issues in Rehabilitation... (3)
      Soc 250...Diversity in American Society... (3)
      Comm 402...International/Intercultural Communication... (3)
      Psy 421...Individual and Group Differences... (3)
      Psy 465...Multicultural Psychology... (3)

  *Note: Students may “double-use” courses for this Certificate and for their majors or minors.
Nursing
(Nurs)

College of Nursing

The baccalaureate program of the University of North Dakota College of Nursing provides a sound background of liberal education, preparation in all basic areas of clinical nursing practice, and a solid foundation for graduate education. The graduate receives the Bachelor of Science in Nursing (B.S.N.) degree and is eligible to take national board examinations for registered nurse licensure. UND Nursing programs are accredited by the Commission on Collegiate Nursing Education (CCNE) and are approved by the North Dakota State Board of Nursing.

B.S. IN NURSING

Required 129 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements including 9 credits of Arts and Humanities, 9 credits of Communications and approximately 9 credits of other electives. A minimum of three (3) credits of the General Education requirements must meet the World Culture designation. (See University GER listing.) It is recommended that students try to complete a portion of these prior to admission to nursing.

II. A minimum overall grade point average of 2.50.

III. The following curriculum:

Freshman Level (Pre-Nursing) First Semester Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Engl 110</td>
<td>College Composition I</td>
<td>(3)</td>
</tr>
<tr>
<td>*Chem 115, 115L</td>
<td>Introductory Chemistry and Lab</td>
<td>(4)</td>
</tr>
<tr>
<td>*Psyc 111</td>
<td>Introduction to Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>Arts/Humanities or Electives</td>
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</tbody>
</table>

Engr 120/125...College Composition I or Technical and Business Writing... (3)

*Chem 116, 116L | Introduction to Organic and Biochemistry/Lab | (4)
*(Chem 122 & 122L, w/40L (150L and 151L))

*Anat 204, 204L...Anatomy for Paramedical Personnel/Lab... (5)
*(Soc or Soc 115 Social Problems or Anth 171 Cultural Anthropology)... (3)

Sophomore Level First Semester Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Nurs 233</td>
<td>Nursing and Professionalism...</td>
<td>(1)</td>
</tr>
<tr>
<td>Nurs 280</td>
<td>.Lab..Introduction to Clinical Nursing/...</td>
<td>(4)</td>
</tr>
<tr>
<td>*Psyc 360</td>
<td>Health Assessment Techniques/ Lab...</td>
<td>(3)</td>
</tr>
<tr>
<td>**PHT 301</td>
<td>Mechanics of Human Physiology/Lab...</td>
<td>(4)</td>
</tr>
<tr>
<td>**MBio 202/202L</td>
<td>Introduction to Medical Microbiology/Lab...</td>
<td>(5)</td>
</tr>
<tr>
<td>Nurs 230</td>
<td>.Lab...Personal and Group Dynamics...</td>
<td>(2)</td>
</tr>
<tr>
<td>Nurs 288</td>
<td>.Lab...Introduction to Adult Health Nursing/Clinical...</td>
<td>(4)</td>
</tr>
<tr>
<td>**PHT 315</td>
<td>Introduction to Pharmacology...</td>
<td>(3)</td>
</tr>
<tr>
<td>Psy 200</td>
<td>Developmental Psychology...</td>
<td>(4)</td>
</tr>
<tr>
<td>Nutr 240</td>
<td>Fundamentals of Nutrition...</td>
<td>(3)</td>
</tr>
<tr>
<td>Electives/Arts &amp; Humanities/World Culture</td>
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Junior Level First Semester Second Semester

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<tr>
<th>Course Code</th>
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</thead>
<tbody>
<tr>
<td>NDK 320</td>
<td>Nutritional Interventions...</td>
<td>(1)</td>
</tr>
<tr>
<td>Nurs 328</td>
<td>Adult Health Nursing...</td>
<td>(4)</td>
</tr>
<tr>
<td>Nurs 382</td>
<td>Adult Health Clinical/Lab...</td>
<td>(4)</td>
</tr>
<tr>
<td>Nurs 383</td>
<td>Childbearing Nursing I/Clinical...</td>
<td>(2)</td>
</tr>
<tr>
<td>Nurs 384</td>
<td>Child Health Nursing I/Clinical...</td>
<td>(2)</td>
</tr>
<tr>
<td>Psyc 270</td>
<td>Abnormal Psychology...</td>
<td>(3)</td>
</tr>
<tr>
<td>Nurs 385</td>
<td>Childbearing Nursing II/Clinical...</td>
<td>(2)</td>
</tr>
<tr>
<td>Nurs 386</td>
<td>Child Health Nursing II/Clinical...</td>
<td>(2)</td>
</tr>
<tr>
<td>Nurs 387</td>
<td>Family in the Community/Clinical...</td>
<td>(3)</td>
</tr>
<tr>
<td>Nurs 392</td>
<td>Nursing Research...</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 326</td>
<td>Sociological Statistics...</td>
<td>(3)</td>
</tr>
<tr>
<td>(Or Psy 241 or Econ 210)</td>
<td></td>
<td></td>
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<tr>
<td>Electives/Arts &amp; Humanities</td>
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</table>

Senior Level First Semester Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Nurs 478</td>
<td>Leadership and Management...</td>
<td>(3)</td>
</tr>
<tr>
<td>Nurs 448</td>
<td>Community Health Nursing...</td>
<td>(3)</td>
</tr>
<tr>
<td>Nurs 484</td>
<td>Community Health Nursing Clinical...</td>
<td>(3)</td>
</tr>
<tr>
<td>**MBio 202/202L</td>
<td>Multisystem Complex Adult Health/Clinical...</td>
<td>(4)</td>
</tr>
<tr>
<td>Nurs 488</td>
<td>Nursing Practicum Theory...</td>
<td>(2)</td>
</tr>
<tr>
<td>Nurs 498</td>
<td>Nursing Practicum...</td>
<td>(4)</td>
</tr>
<tr>
<td>Nurs 440</td>
<td>Trends in Nursing...</td>
<td>(2)</td>
</tr>
<tr>
<td>Nurs 483</td>
<td>Mental Health Nursing/Clinical...</td>
<td>(4)</td>
</tr>
<tr>
<td>Electives/Arts &amp; Humanities</td>
<td></td>
<td>(3)</td>
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</tbody>
</table>

*Required Courses for Admission to the Nursing major.
**Must be taken Fall Semester.
***Usually taken Spring Semester.

PROGRESSION AND CLINICAL REQUIREMENTS AFTER ADMISSION

Students should note that nursing courses are sequenced to build on one another over six semesters. Careful attention should be paid to pre-requisites. Each semester is to be completed in its entirety before progressing to the next semester.

1. A 2.50 overall GPA is required for progression at the end of the sophomore year and each semester thereafter.

2. A student must attain a letter grade of at least a “C” in each of the courses required in the undergraduate nursing curriculum, including all the nursing, science and support courses, to progress to the next semester of nursing courses and for graduation within the College of Nursing.

3. A student earning a “D” or an “F” in a clinical nursing course may repeat that course only once.

4. A student may only repeat one clinical nursing course.

5. The following verifications are required of sophomore, junior, and senior students for admission to nursing classes, labs, and clinicals:
a. current CPR certification by the American Red Cross or American Heart Association to include adult, child and infant; including one- and two-person CPR.

b. initial negative 2-step tuberculin skin tests and a negative skin test annually thereafter or, if positive, medically certified absence of symptoms.

c. current medical/hospitalization insurance or certification of assumption of full responsibility for any health treatment costs incurred.

d. A hepatitis B vaccine series and a titer if series completed within the past 3 years.

e. proof of immunity to measles (rubella), mumps, and rubella.

f. proof of immunity to chicken pox (varicella).

g. documentation of attendance at OSHA in-service/training.

Students who do not meet the academic progression criteria will be placed on probation. The nursing program also reserves the right to place students on probation, to suspend, or to dismiss any student in nursing whose performance in relation to client care is unsatisfactory. Additional details and any modifications in policies may be obtained from the Office of the Dean of the college, and are available in the College of Nursing undergraduate student handbook.

**RN/BSN OPTION - NURSING CURRICULUM**

**SEQUENCE - ON LINE**

Students in the RN/BSN option program may attend classes either full or part-time. Thirty semester credits of UND nursing coursework are required (see below). In addition, students must complete all UND general education requirements. College of Nursing pre-requisites and UND graduation requirements. A minimum of 129 credits and a minimum grade point average of 2.50 are required for graduation. Support courses should be completed before beginning College of Nursing courses.

The following courses or their equivalents must be either completed at UND or accepted by the nursing program as transfer credit.

Communications: 9 semester credits. See UND General Education Requirements for specific listing.

Arts and Humanities: 9 semester credits. See UND General Education Requirements for specific listing. Typically, 3 credits of a world culture course is included within these 9 credits.

Coursework from completed associate degree or diploma program in nursing is required.

**Required support courses (should be completed prior to beginning College of Nursing courses):**

- Chemistry 115, 115L or 121, 121L (inorganic)
- Psychology 111 (Introductory)
- Chemistry 116, 116L (Organic/Biochemistry)
- Microbiology 202, 202L
- Anatomy 204, 204L
- Sociology 110 or 115 or Anthropology 171
- Developmental Psychology 250
- Abnormal Psychology 270
- Pharmacology (PPT 315)
- Nutrition 240 Fundamentals of Nutrition
- Physiology (PPT 301)
- Statistics course (Soc 326, Psy 241 or Econ 210)

The following are the courses remaining for most RN/BSN students after establishing credit for prior associate degree or diploma education.

**Courses Offered Fall Semester:**

**Nurs 361** New Concepts in Nursing I .......................... (3)

**Nurs 392** Nursing Research ........................................... (3)

**Nurs 478** Leadership and Management .......................... (3)

**Courses Offered Spring Semester:**

Nurs 360 Health Assessment Techniques ......................... (3)

Nurs 362 New Concepts in Nursing II .............................. (4)

Nurs 440 Trends in Nursing ............................................. (2)

Nurs 448 Community Health Lecture ................................ (3)

Nurs 448 Community Health Clinical ................................ (3)

**Effective Nursing Courses**

A minimum of six credits are to be chosen from the courses listed below. The six credits must include at least three credits of a course with a clinical component. Nurs 394, Independent Study and Nurs 489. Senior Honors can be designed to include clinical components. Nurs 397, Family in the Community and Nurs 481, Multisystem Complex. Adult Health, and Nurs 498, Nursing Practicum contain clinical components.

N&D 320 Nutritional Interventions ...................................... (1)

Nurs 387 Family in the Community ..................................... (3)

Nurs 394 Independent Study ............................................. (1-4)

Nurs 400 Special Topics .................................................. (2-3)

Nurs 418 Complementary Healthcare Therapies .................... (3)

**Nurs 481** Multisystem Complex AH ............................. (4)

**Nurs 483** Mental Health .................................................. (4)

**Nurs 486** Nursing Practicum Theory ............................... (2)

**Nurs 489** Seniors Honors ............................................. (6-15)

**Nurs 490** Transcultural Nursing .................................. (3)

**Nurs 498** Nursing Practicum ........................................ (1-4)

**Courses**

Unless otherwise indicated, nursing courses are open only to those admitted to the Nursing Program or with the consent of the instructor.

The methods for achievement of curriculum/course objectives may be individualized as needed.

NOTE: Some clinical courses may require early morning, evening, night, or weekend clinicals to provide the most varied and rewarding experience for the students. Some experiences may be at places distant from Grand Forks.

230. Personal and Group Dynamics. 2 credits. Pre- or corequisites: Psy 111. Focus is on awareness and use of self as a holistic person and as a professional, on communication and interviewing skills, and on the role of group processes in promoting personal and professional growth. Seminar F, S. F 5.

233. Nursing and Professionalism. 1 credit. Characteristics of a profession, a professional, and professional nursing practice; as well as the evolution of nursing as a profession are explored. Seminar F, S. Open to non-majors.

200. Introduction to Clinical Nursing. 3 credits. Pre- or corequisites: Nurs 360, 233, PPT 301. Focus is on the theories, concepts, behaviors, and intervention skills basic to professional nursing practice. Use of the nursing process is emphasized in the care of adults, particularly in the middle and older developmental stages. Lecture/discussion/laboratory. F, S.


360. Health Assessment Techniques. 3 credits. Pre- or Corequisites: PPT 301 or consent of instructor. Within the nursing process, the emphasis is on holistic assessment of the health status of adults. Lecture/discussion/laboratory. F, S.

361. New Concepts in Nursing Practice I. 3 credits. Prerequisite: RN or consent of instructor. Topics, including the College of Nursing philosophy, are selected to prepare RN/BSN nursing students for their role as professional nurses. Special issues in nursing practice are analyzed as they relate to the role of the professional nurse in the ever-changing health care system. Open to pre-nursing RNs. F, S.

362. New Concepts in Nursing Practice II. 3 credits. Prerequisite: RN or consent of instructor. Topics, including the College of Nursing philosophy, are selected to prepare RN/BSN nursing students for their role as professional nurses. Special issues in nursing practice are analyzed as they relate to the role of the professional nurse in the ever-changing health care system. Open to pre-nursing RNs. F, S.

382. Adult Health Clinical. 4 credits. Pre- or corequisites: Nurs 328 and 382. Focus is on nursing care for health maintenance and health promotion during childbearing. Lecture/clinical. Successful completion of the non-credit clinical experience is required. F, S.

383. Childbearing Nursing I. 2 credits. Pre- or corequisites: Nurs 328 and 382. Focus is on nursing care for health maintenance and health promotion during childbearing. Lecture/clinical. Successful completion of the non-credit clinical experience is required. F, S.

384. Child Health Nursing I. 2 credits. Pre- or corequisites: Nurs 328 and 382. Focus is on nursing care for health maintenance and health promotion during childbearing. Lecture/clinical. Successful completion of the non-credit clinical experience is required. F, S.

385. Childbearing Nursing II. 2 credits. Prerequisites: N&D 320, Nurs 328, 382 and 383. Focus is on nursing care in illness and health restoration during childbearing. Lecture/clinical. Successful completion of the non-credit clinical experience is required. F, S.

386. Child Health Nursing II. 2 credits. Prerequisites: N&D 320, Nurs 328, 382 and 384. Focus is on nursing care during illness and health restoration during childhood. Lecture/clinical. Successful completion of the non-credit clinical experience is required. F, S.

387. Family in the Community, 3 credits. Pre- or corequisites: Nurs 385, 386 and 382. Focus is on family-centered, community-based services for expectant families and families caring for children with special needs. Emphasis is on standards of prenatal care, risk assessment, parenting, children with chronic illness and/or disability, and multidisciplinary services. Lecture/clinical/discussion/ laboratory. Successful completion of the non-credit clinical experience is required. F, S.

389. Honors Tutorial, 3-6 credits. Supervised independent study in Nursing for students enrolled in the 4-year Honors Program.

University of North Dakota
392. Nursing Research. 3 credits. Pre- or corequisite: Nurs 288. Statistics. Introduction to nursing research with a focus on the interrelationship among nursing practice, theory and research. Lecture/Discussion. F, S.

394. Independent Study. 1-4 credits. May be offered at the discretion of the student, faculty member, and college. Supervised independent study of non-honors students in nursing. May be repeated up to 9 credits. Open to juniors and seniors in the nursing program.

397. Cooperative Education. 1-2 credits per semester. Prerequisites: Nurs 288 and completion of all sophomore year core courses and a 2.5 overall GPA. A reality experience in nursing internship or clinical work experience and evaluation. Designed to enhance the student’s prior coursework in nursing. Qualified nursing students are employed by selected health care agencies either during the summer or academic year. Hours are arranged within the guideline of ten hours per credit. S/U grading only. F, S.

400. Special Topics. 1-4 credits. May be open to non-majors. Elective opportunities offered in the College of Nursing which may be a combination of special projects, seminars, and clinical experiences.

401. Complementary Healthcare Therapies: Interdisciplinary Implications for Self-Care, Practice and Research. 3 credits. The focus of this elective course is the analysis of theory, research, and practice of complementary health therapies. The goal of the course is not to provide skills training in any specific technique. Instead, the course is intended to augment the health care professional’s education by providing a broad overview of selected complementary therapies commonly used in the United States. Legal and ethical implications will be analyzed.

418. Physical Changes in Aging. 3 credits. Focus is on common physiological changes of aging and their impact on the older adult’s ability to function. Lecture/Discussion. Open to non-majors. F, S.

420. Trends. 2 credits. Prerequisite: Nurs 361 or 387. Trends: controversies and other issues in nursing and health care delivery are explored. Seminar. F, S.

448. Community Health Nursing Theory. 3 credits. Prerequisites: Nurs 385, 386, 387, 392 and Soc 526 or Econ 210 or Psy 241. Focus is on the health of the community. An emphasis is placed on the use of assessment tools and models, the epidemiological approach and various health screening procedures to promote health. The utilization of community resources and collaboration and coordination of services within the health care system are explored as a means of assuring quality, accessibility and continuity of health care. Lecture/Discussion. F.

478. Leadership and Management. 1 or 3 credits. Prerequisites: Nurs 392 and 387. Focus is on the management and leadership roles of the professional nurse in the delivery of comprehensive health care. Seminar. F, S.

481. Multisystem Complex Adult Health. 4 credits. Prerequisites: Nurs 328, 382, 478 and 484. Corequisites: Nurs 478 and 484. Focus is on the management of nursing care adults with multisystem health problems. Lecture/Discussion/Clinical. Successful completion of the non-credit clinical experience is required. F, S.

483. Mental Health Nursing. 4 credits. Prerequisites: Nurs 448 and Psy 270. Corequisite: Nurs 448. Focus is on promotion, maintenance, and restoration of mental health throughout the life cycle while practicing as a caring, collaborative, professional nurse. Lecture/Discussion. F, S.

488. Nursing Practicum Theory. 2 credits. Prerequisites: Nurs 448, 478, 481 and 484. Role transition, the socialization process, and research and theory related to legal, ethical, and evaluation issues are emphasized in preparation for assuming beginning or enhanced positions within the nursing profession. Lecture/Discussion. F, S.

489. Senior Honors Thesis. 1 to 8 credits; total not to exceed 9. Prerequisite: consent of the department and approval of the Honors Committee. Supervised independent study culminating in a thesis. F, S.

490. Transcultural Health Care Theories, Research and Practice. 3 credits. Prerequisites: Junior standing or permission of instructor. Analysis of theories, principles, and research related to transcultural health care. Students develop awareness of the biological, psychological, and sociological aspects of clients of selected cultural groups and identify their specific health care values and practices. F, S.

498. Nursing Practicum. 1 to 4 credits. Pre- or corequisite: Nurs 448. Emphasis is on the role transition process involved in establishing oneself in a position within an agency as well as integrating the many aspects of the role of a professional nurse. Clinical. F, S.

**Nutrition and Dietetics (N&D)**

Hall (Chair), Ekanger, Goodwin and Gothman

The primary mission of the Department of Nutrition and Dietetics is to provide academic preparation and pre-professional practice experience for future professionals in the fields of nutrition and dietetics. The Department achieves this mission through its offering of two majors and a nutrition minor. The professional programs offered lead to entry-level competence and degrees in:

- B.S. in Community Nutrition
- B.S. in Dietetics

The major in Community Nutrition enables students to develop a thorough understanding of the science of nutrition as well as the ability to communicate nutrition principles effectively and accurately to the public. The focus of study is on the role of nutrition in achieving and maintaining health, emphasizing changing needs throughout the life cycle. Graduates will be prepared to complete community nutrition assessments and to work individually or collaboratively with other professionals in identifying problems and developing, conducting and evaluating interventions to improve the overall health of individuals and communities. Students majoring in Community Nutrition select from two options. Any graduate completing N&D 441 — Advanced Nutrition is eligible to become a Licensed Nutritionist (L.N.) in the state of North Dakota. To graduate, the Community Nutrition major must earn a “C” or better in all nutrition, foods, and science courses and must maintain a minimum grade point average of 2.2.

The Coordinated Program in Dietetics combines academic preparation with supervised practice experiences for students who wish to become a Registered Dietitian (R.D.). Students work in a variety of settings to assist clients to improve or maintain nutritional health. Upon completion of this degree, the graduate is eligible to take the examination for professional registration and to apply for active membership in the American Dietetic Association. Students apply for admission to the professional phase of the program during the second semester of the sophomore year or when they have completed the pre-professional requirements. A minimum grade point of 2.00 and a minimum of a “C” grade in all science, foods, and nutrition courses are required for acceptance, progression, and graduation. The Coordinated Program in Dietetics is fully accredited by the Commission on Accreditation for Dietetics Education of the American Dietetic Association, a specialized accrediting body recognized by the Council on Higher Education Accreditation and the United States Department of Education.

**College of Nursing**

**B.S. IN COMMUNITY NUTRITION**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

1. General Education Requirements (see University GENERAL listing).
2. Prerequisite Courses:
   - Engl 110............College Composition I.................................(3)
   - Engl 125............Technical and Business Writing......................(3)
   - *Chem 121, 121L, 122, 122L......General Chemistry I & II and Laboratories........(8)
   - Biol 200..............Biology I.................................(3)
   - Anat 204/204L............Anatomy for Paramedical Personnel and Laboratory......(5)
   - or
   - Biol 150, 150L.............General Biology I and Laboratory....................(4)
   - PPT 301.........Mechanics of Human Physiology..............................(4)
   - Psy 111..............Introduction to Psychology..............................(3)
   - Math 303..............College Algebra........................................(3)
   - Mkrt 201..............Personal Marketing..................................(3)
   - Soc 326..............Sociological Statistics.................................(3)
   - or
   - Psych 241..............Introduction to Statistics...........................(4)
   - Comm 110..............Fundamentals of Public Speaking......................(3)
   - Comm 212..............Interpersonal Communication..............................(3)
   - Comm 366..............Business and Professional Speaking.....................(3)
   - Swk 200..............Introduction to Helping Skills............................(2)
   - T&D 252..............Child Development......................................(3)
   - or
   - Psych 250..............Developmental Psychology...........................(4)

The minimum of a “C” grade in all science, foods, and nutrition courses is required for acceptance, progression, and graduation. The Coordinated Program in Dietetics is fully accredited by the Commission on Accreditation for Dietetics Education of the American Dietetic Association, a specialized accrediting body recognized by the Council on Higher Education Accreditation and the United States Department of Education.
B.S. IN DIETETICS

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER licensing).

II. The following curriculum:

IV. Choice of either Option A or Option B.

Option A:

* N&D 220. Foodservice Safety and Sanitation. (1)

N&D 340. Foodservice Systems Production. (2)

N&D 241. Maternal and Child Nutrition. (2)

N&D 355. World Food Patterns. (3)

N&D 400. Professional Issues. (2)

N&D 448. Research in Nutrition and Dietetics. (3)

N&D 494. Research in Nutrition and Dietetics. (3)

IV. Choice of either Option A or Option B.

Option B:

* N&D 335. The Family. (3)

* PEMS 327. Fitness for Life. (3)

or

N&D 348. Sports Nutrition. (1)

Soc 355. Drugs and Society. (3)

or

Soc 335. Introduction to Pharmacology. (3)

Soc 352. Aging. (3)

* N&D 305. Managerial Concepts may be substituted for N&D 220, 340, and 448.

V. Electives or minor

In consultation with adviser, the student will select a minor or electives to meet the University minimum of 125 semester hours of credit for graduation.

MINOR IN NUTRITION

A minor in Nutrition requires successful completion of at least 20 credits taken from the following list of courses. Selection of courses should be made in consultation with a faculty member in the Department of Nutrition and Dietetics.

N&D 100. Nutrition Promotion Strategies. (1)

N&D 200. Foodservice Safety and Sanitation. (1)

N&D 240. Maternal and Child Nutrition. (2)


N&D 355. World Food Patterns. (3)

N&D 360. Foodservice Systems Production. (2)

N&D 342. Community Nutrition. (3)

N&D 348. Sports Nutrition. (1)

N&D 397. Cooperative Education. (1-2)

N&D 400. Professional Issues. (2)

N&D 440. Foodservice Management. (1)

N&D 441. Advanced Nutrition. (4)

* A maximum of 4 credits from this list of courses may be counted in the minor.

Chem 116/116L. *Intro to Organic & Biochemistry/Lab. (5)


* MBio 302/302L. *General Microbiology/Lab. (4)

Other courses may be counted toward the minor with written approval of a faculty member in the Department of Nutrition and Dietetics.

Courses

100. Introduction to Nutrition and Dietetics. 1 credit. The philosophy, history, future trends, and career options in nutrition and dietetics will be discussed. S/U grading only. S

200. Foodservice Safety and Sanitation. 1 credit. Prerequisites: N&D 240 and 241. Study of food safety and sanitation throughout the foodservice system. Upon successful completion of the course and examination, the student will hold ServSafe® Certification. F

240. Maternal and Child Nutrition. 2 credits. Prerequisite: Nutr 240. Introduction to nutrition for the young child through pregnancy. F

242. Nutrition in the Aging Process. 2 credits. Prerequisite: Nutr 240. Application of physiological, socio-psychological, and educational aspects of nutrition as it impacts the health and well-being of people as they age. S

246. Principles of Foods and Food Science. 5 credits. Prerequisite: College chemistry course. Introduction to food selection and preparation principles, including consumer trends, sensory evaluation, meal and menu planning, and food sanitation. Application of scientific principles to relationship to food composition, physical properties, and chemical reactions. S

300. Orientation to Dietetics. 1 credit. Prerequisite: Admission to the dietetic program. Study of the profession of dietetics and relationship to health care systems including professional concerns and ethical issues. S

320. Nutritional Interventions for Patient Care. 1 credit. Prerequisite: NUTR 240. Focuses on nutrition interventions related to the holistic care of adults while incorporating the nursing process. Nutrition concepts in promoting, maintaining, and restoring optimal health are applied. Lecture/discussion. F/S

335. World Food Patterns. 3 credits. Examination of the food patterns of selected world population groups considering the effect of social, cultural, and economic practices on nutritional values. F

340. Foodservice Systems Production. 2 credits. Prerequisites: N&D 260. Principles of food production as applied to preparation, service, and evaluation of foods; use and operation of food service equipment. F

342. Community Nutrition. 3 credits. Prerequisites: N&D 241, 242 or consent of instructor. Application of nutrition principles to populations in various community environments and stages of life cycle with consideration given to related health, social, and economic concerns. S

Occupational Safety and Environmental Health (OSEH)

Diez (Program Coordinator)

The Occupational Safety and Environmental Health (OSEH) program is a 36-credit major leading to the baccalaureate degree, bachelor of science. The OSEH program is administered by the Department of Industrial Technology. It has a 30-credit core of interdisciplinary coursework, which provides a sound professional background. The remaining 28 credits are selected from one of two technical concentrations: Industrial Safety or Industrial Hygiene. The degree program draws coursework from 12 academic departments and utilizes resources from the University’s Office of Safety and Environmental Health.

ADMISSION PROCESS

Admission to the occupational safety and environmental health major program of study is on a competitive basis. Ten students may be admitted per academic year. Students not meeting these minimum requirements may be admitted with probationary status upon recommendation of the Occupational Safety and Environmental Health Admissions Committee.

ADMISSION REQUIREMENTS

A. A student must have completed the equivalent of 58 semester hours of coursework.
B. A student must have completed the following courses (or equivalents) with a minimum grade of C:

- Chemistry 121 & 122 & Laboratories ..................... 8 hours
- Math 103 ........................................................................ 3 hours
- Phys 217 ........................................................................ 4 hours
- Phys 161 and Laboratory ............................................. 4 hours
- Biol 150 & Laboratory ................................................. 4 hours

C. A student must have completed 15 hours in residence at the University of North Dakota with a minimum 2.2 GPA. Transfer students will have official transcripts evaluated to determine the 15-hour requirement.

ADMISSION PROCEDURE

Obtain the application packet and submit:

A. The application form
B. One reference (sent directly to the University of North Dakota by the person writing the reference)
C. An official transcript of previous coursework (sent by your institution directly to UND)
D. Essay on “Rationale for Applying for Admission to the Occupational Safety and Environmental Health Program, University of North Dakota” (part of application packet)
E. The submitted materials will be examined, analyzed, and a decision will be made on your application. You will receive written notice of that decision. The decision may be that you have been accepted, placed on the waiting list for a succeeding semester, or denied for admission.

College of Business and Public Administration

B.S. IN OCCUPATIONAL SAFETY AND ENVIRONMENTAL HEALTH

Required 125 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. OSEH Admission Requirements (see above)

Occupational Safety and Environmental Health Curriculum:

General Core (Required) 31 credit hours

- Math 146. Applied Calculus I .........................(3)
- Anat 204. Anatomy for Paramedical Personnel ...(3)
- Econ 201. Intro to Business & Economic Statistics ..(3)
- Pscy 301. Developmental & Behavioral Psychology ..(3)
- IT 203. Production Processes: Manufacturing ....(3)
- OSEH 345. Emergency Response ....................(3)
- PEXX 110. First Aid ...........................................(2)
- Engl 125. Business & Technical Writing ..........(3)
- Acat 315. Business in the Legal Environment ....(3)
- Mgmt 300. Principles of Management ...............(3)
- Mgmt 302. Human Resources Management .......(3)

Plus one of the following two options:

Industrial Safety Concentration (Option I)

Required: 27 credits including:

1. The following 15 credits:
   - OSEH 305. Fire Safety ...........................................(2)
   - OSEH 325. Fire Safety ...........................................(3)
   - OSEH 355. Inspection .........................................(1)
   - OSEH 405. Industrial Hygiene .........................(3)
   - OSEH 425. OSEH Seminar ..............................(3)
   - OSEH 440. Industrial Safety ....................(3)

2. 12 credits selected from the following:
   - IT 122. Computer Aided Design/ Drafting ..........(3)
   - IT 212. Principles of Graphic Design & Layout ....(3)
   - IT 397. Cooperative Education .......................(1-3)
   - IT 490. Teaching Technology Education ..........(3)
   - OSEH 326. Transportation Safety .................(2)
   - OSEH 365. Radiation .....................................(2)
   - OSEH 375. Asbestos ......................................(2)
   - OSEH 385. Instrumental ................................(2)
   - OSEH 435. Risk Management .......................(2)
Industrial Hygiene Concentration (Option II)

Required: 27 credits including:

1. The following 17 credits:
   - Chem 330. Quantitative Analysis .............................................. (4)
   - OSEH 405. Industrial Hygiene ............................................... (3)
   - PPT 410. Drugs Subject to Abuse ........................................... (2)
   - OSEH 425. OSEH Seminar .................................................. (3)

2. 10 credits selected from the following:
   - IT 122. Computer Aided Design/Drafting ............................... (3)
   - IT 212. Principles of Graphic Design & Layout ...................... (3)
   - IT 397. Cooperative Education ............................................. (1-3)
   - IT 400. Teaching Technology Education ................................ (3)
   - OSEH 355. Inspections ....................................................... (1)
   - OSEH 365. Radiation .......................................................... (2)
   - OSEH 375. Asbestos ............................................................ (2)
   - OSEH 385. Instrumentation ................................................. (2)
   - OSEH 395. Hazardous Material Management .......................... (3)
   - OSEH 440. Industrial Safety ................................................ (3)

Graduation Requirements for the BS / OSEH Degree

Students must achieve the following to graduate with the Bachelor of Science in Occupational Safety and Environmental Health administered through the Faculty of Health, Science, and Technology and the College of Business and Public Administration.

1. Meet the applicable graduation requirements of the College of Business and Public Administration.
2. Have a 2.50 GPA in the major program of study.
3. Meet the standard for the exit examination of the student’s selected concentration(s).
4. Successful completion of the mid-program review, portfolio, and the written report.

Retention Standards for the BS / OSEH Degree

To remain a student in good standing, the student must attain the following:

1. A cumulative GPA of 2.20 and a minimum of 2.50 in the major program of study.
2. Submit a portfolio of materials upon completion of 24 credits in the major program of study. Included in this portfolio will be a position paper relating to the goals, objectives, and responsibilities of the safety and health professional.
3. Upon completion of 35 credits of the major, a written report will be submitted that outlines the student’s philosophical position in relation to the student’s selected concentration within the Occupational Safety and Environmental Health major.

Students not achieving the GPA standard, or deemed to not be making satisfactory progress as a result of the mid-program review or not achieving a satisfactory review of the written report, will be placed on probation for one semester. At the conclusion of that semester, the student will be reevaluated and either returned as a student in good standing or dropped from the program. After two semesters, the student may apply for readmission to the major program of study.

Courses

226. Transportation Safety, 3 credits. An introductory course in transportation safety pertaining to personalized and fleet transportation systems. Emphasis will be on human characteristics related to driving, driving improvement, and state/national laws.

305. Fire Safety, 2 credits. Prerequisite: Chem 122. Students will explore and familiarize themselves with those codes that are used to ensure fire-safe environments in structures of all types. The student will learn how to apply these codes to various situations, hazards, and situations.

325. Construction Safety, 3 credits. A study of the rules and regulations of construction safety. Emphasis will be focused on management techniques, recordkeeping documentation, and training requirements of the construction industry.

345. Emergency Response, 2 credits. Prerequisites: Anat 204 and PEXS 310. Emphasis will focus on the knowledge of regulatory requirements. Students will be versed in planning activities, the tools, protective equipment and emergency response procedures needed by those who respond to emergencies. Students will participate in laboratories. SS

355. Inspections, 1 credit. Prerequisite: IT 440. Special consideration is given to the problems associated with interactions with management as related to regulatory matters. An awareness of the various rules and regulations which affect the workplace are part of the overview presented by this course. SS/2

365. Radiation, 2 credits. Prerequisite: Chem 122. Special emphasis is given to the problems associated with the proper and safe handling of Radioactive Materials in both the sealed and unsealed forms. Consideration is given to the regulatory requirements which might face a licensee. F/2

375. Asbestos, 2 credits. A study of asbestos, its characteristics, the rules and regulations regarding asbestos abatement, and the tools, protective equipment, and procedures utilized for asbestos abatement. SS/2

385. Instrumentation, 2 credits. A study of the rules, regulations, requirements for the sampling analysis and monitoring of the business and industry work place environments. Emphasis will be placed on the instrumentation, calibration and other techniques required for managing the process, developing a comprehensive program, record keeping requirements, documentation, and training requirements. F/2

395. Hazardous Materials Management, 3 credits. Prerequisite: Chem 122. Students will study the problems associated with proper, safe handling, and disposal of hazardous materials. Special consideration will be given to regulatory requirements, exposure limits, protective measure to be employed in response to hazards faced by employers who must handle these materials. Regulatory and environmental protection issues are addressed as they relate to current industry operations to include the recognition, evaluation, control and disposal of hazardous materials as they relate to industry. Demonstration of field trips and group activities will be an integral part of this course.

405. Industrial Hygiene, 3 credits. Prerequisite: Anat 204. Chem 122. Hazards in the workplace as they relate to our health will be addressed. The course will include the recognition, evaluation, control of hazards as they relate to industry. F/2

425. Occupational Safety and Environmental Health Seminar, 3 credits. A study of emerging issues and concerns related to the Occupational Safety and Environmental Health profession. Involvement of practicing safety and health professionals and regulatory agency officials provide insight into the evolution of safety and health policies. SS/2

435. Risk Management, 2 credits. The focus of this course will be on the global perspective of loss control measuring efforts in the minimization of financial insurance and workers compensation liabilities. F/2

440. Industrial Safety, 3 credits. Prerequisite: Upper Division Students only. The major safety concerns and problems commonly associated with the industrial and occupational environment are addressed. Emphasis is placed on the study of safety rules and regulations, implementation of management tools to benefit people for optimum safety conditions and productivity, and the documentation required for record keeping. SS

Occupational Therapy

(OT)
See Graduate School Section

Peace Studies

(PS)

The Peace Studies courses listed below may be taken either as elective courses or as part of a Peace Studies program in Interdisciplinary Studies (IDS). For information on the major in Interdisciplinary Studies, see Interdisciplinary Studies listing and consult the Director of IDS in O’Kelly Hall, Room 129.

The Peace Studies courses are taught by faculty from the departments of philosophy and religion, history, education, economics, English, geography, psychology, sociology, languages, and the natural and physical sciences. Their goal is to encourage critical scholarly thinking and action by students and faculty in the growing areas of interest in issues of peace, war, social justice and human rights. They are excellent preparation for graduate study in a range of legal, governmental, social service, educational, theological and international fields. The major requires 36 credits, including at least 23 credits as listed below (all but Independent Study are required). Other courses
may be selected to focus on an area of interest, such as those from the Chinese Studies minor, or from the courses cross-listed under Peace Studies in the Time Schedule of Classes.

Courses

Unless otherwise noted, courses are PS

101. Introduction to Peace Studies. 3 credits. An introduction to the major content of the Peace Studies Program: problems of peace and war in the post-Cold War age; alternative means of conflict resolution, a history of nonviolence as a moral and political philosophy, and a variety of social justice issues. F

Phil 215. Contemporary Moral Issues. 3 credits. An introduction to the problems connected with moral choice. This course examines the moral judgments that follow from the values held by a wide variety of people today on topics ranging from abortion to race, sexual behavior, the environment, etc. F

IDS 280. Learning Across Disciplines. 3 credits. S

Hist 335. Nuclear Weapons and the Modern Age. 3 credits. An introduction to the history of nuclear weapons and their delivery systems, their development and use during World War II, the nuclear arms race between the U.S. and the former U.S.S.R., popular disarmament movements, and diplomatic efforts to control nuclear weapons and their proliferation. A final section will deal with the nuclear implications of the end of the Cold War and the development of new nuclear states in the last years of the 20th century. The course will include — from an historian’s perspective — some technical material necessary to a reasonable and realistic understanding of the subject. S

360. Conflict Management. 3 credits. A survey of the nature, causes, and dynamics of conflict and of the ways that conflicts can be managed. Summer, or on demand through Psychology Department.

394. Independent Study. 1-4 credits (maximum of 6 credits) Prerequisite: consent of instructor. Supervised reading, study or research on an individual topic. On demand.

IDS 491. Capstone Interdisciplinary Seminar. 1-3 credits. F, S

497. Internship. 6-16 credits. Prerequisites: Junior standing and advisory approval. Provides direct experience in a peace-related social change, human rights/ human rights or international agency. F, S

IDS 498. Senior Project. 3-6 credits. Prerequisites: Senior standing and advisory committee approval. Production of a major academic project, which is shared with other majors, and concludes the student’s program. F, S

Philosophy and Religion/Phil and Rels

155

The two disciplines of Philosophy and Religion represent humankind’s abiding interest in the fundamental questions of life, truth, and value. Questions about the meaning of life, the significance of death, the access to knowledge, and the ability to live ethically have been studied by philosophers and theologians from the time of Socrates and before. Philosophy seeks answers which, chiefly, refer to human capacities and ideals and to the world of experience in which we live; Religion will often include postulates about divine forces and spiritual realities in the answers it frames. The two disciplines tend to be more distinct in Western culture; philosophers and theologians have often been in bitter conflict both with each other and with religious authorities. In Eastern cultures, however, philosophy and religion overlap — often appearing as complements. In both East and West these two fields of study represent the longest and most basic traditions of literature and the intellectual life. Though Philosophy and Religion both address questions of ultimate meaning, each discipline preserves its own literary history and its own scholarly tradition.

Every student can benefit from coursework in Philosophy and Religion. Most courses in the department fulfill General Education Requirements in Arts and Humanities. Several major programs require or recommend specific courses to their students. A two to five course series of courses in Philosophy and Religion can be designed to complement major programs in nursing, engineering, science, business, criminal justice studies, as well as humanities disciplines. Minor programs (20 hours) in Philosophy and Religion can also give depth and breadth to any major program. Neither Philosophy nor Religion requires a large technical vocabulary even in upper level courses. Juniors and seniors are urged to register for courses at the 300-400 level even though they have not taken courses at the 100-200 level.

Those students who wish to pursue a major or a second major in Philosophy and Religion must follow one of the two programs of concentration:

Courses

Undergraduate Courses

284. ST:Blended Research in Psychology. 1-4 credits, repeatable to 4 credits. Prerequisites: advanced undergraduate standing and consent of instructor. Laboratory research under faculty supervision. F, S, SS

301. Mechanics of Human Physiology. 4 credits. Prerequisites: introductory courses in two of the following subjects: anatomy, chemistry, or biology. A study of the normal function of the human body with particular consideration given to the necessary background needed by students pursuing a course of study in Allied Health Sciences. There are five hours of formal classroom study including two hours of laboratory and an optional review period each week. F, S, SS

315. Introduction to Pharmacology. 3 credits. Prerequisites: PPT 301 and Chem 107 or equivalent. A survey of the major important drugs used in medicine, including basic principles, clinical uses, and possible adverse effects. S

416. Drugs Subject to Abuse. 2 credits. Prerequisite: advanced undergraduate standing. Biochemical, pharmacological, behavioral, and therapeutic aspects of substance abuse. S

492. Research in Pharmacology, Physiology and Therapeutics. 1-4 credits, repeatable to 4 credits. Prerequisite: advanced undergraduate standing and consent of instructor. Laboratory research under faculty supervision. F, S, SS

499. Readings in Pharmacology, Physiology and Therapeutics. 1-4 credits. Prerequisites: advanced undergraduate standing and consent of instructor. Topics and credits to be arranged with the instructor. F, S, SS

Pharmacology, Physiology and Therapeutics

(PPT)

Benoit, Borg, Brown-Borg, Clarenz, Combs, Doze, Ebadi, Haselton, McCleary, Murphy, Picklo, Porter and Vari

The undergraduate mission of the Department of Pharmacology, Physiology and Therapeutics is to provide students majoring in Allied Health and Science programs with a basic foundation in pharmacology and physiology. Individual courses in pharmacology and physiology are required for various Allied Health and Science programs, the Athletic Trainers program, and the Chemical Use/Abuse Awareness minor in Social Work. Emphasis is placed on concept relevance in each of the courses to the students’ respective professional careers. While meeting each student’s academic program requirements, it also enhances each student’s opportunity to further their education in the health sciences at the graduate and professional level.

Educational objectives for individual pharmacology courses include the biological consequences of prescription and over-the-counter drugs, the mutual interactions of athletic performance and drug effects, and substances of abuse. Educational objectives for the physiology course cover general physiology from the level of molecules to the whole organism, with emphasis on the homeostatic mechanisms. The Department also fosters and encourages the participation of undergraduate students in ongoing faculty-directed research through an independent study option.
1. B.A. in Philosophy and Religion: Philosophy Concentration

2. B.A. in Philosophy and Religion: Religion Concentration

**College of Arts and Sciences**

**B.A. WITH A MAJOR IN PHILOSOPHY AND RELIGION:**

**PHILOSOPHY CONCENTRATION**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. Philosophy Concentration requirements.

33 major hours, including:

- Phil 101........Introduction to Philosophy.................................................(3)
- Phil 220........Introduction to Logic.........................................................(3)
- 3 hours from:
  - Religion Curriculum

6 hours from:

- Phil 300........Classical Greek and Hellenistic Philosophy.........................(3)
- Phil 301........Medieval Philosophy............................................................(3)
- Phil 302........Renaissance and Enlightenment........................................(3)
- Phil 303........Kant and the Nineteenth Century.......................................(3)

A minimum of 18 hours of upper level work in Philosophy.

6 hours from an open-ended list of diversity/multicultural courses, which will include, but not be limited to, the following: (for other possibilities, check with advisers in the department).

A&S 225........Introduction to the Study of Women........................................(3)
A&S 250........African American Religious History.....................................(3)
Engl 365......Black American Writers..........................................................(3)
Geog 151......Human Geography.................................................................(3)
Hist 345........The Ancient Near East.......................................................(3)
IS 352........Native American Philosophic Thought......................................(3)
Phil 283........Asian Philosophy..................................................................(3)
Rels 203........World Religions....................................................................(3)
T&L 433........Multicultural Education..........................................................(3)

Some of these courses simultaneously fulfill other Philosophy/Religion requirements.

Language requirement:

Reading proficiency in the philosophical literature of any foreign language is strongly recommended. Majors in philosophy should be aware that proficiency in symbolic logic is expected in most graduate schools and in some substitutes for proficiency in a foreign language.

**MINOR IN PHILOSOPHY AND RELIGION:**

**PHILOSOPHY CONCENTRATION**

Required 21 credits in Philosophy:

6 hours from:

Phil 283........Asian Philosophy..................................................................(3)
Phil 300........Classical Greek and Hellenistic Philosophy...........................(3)
Phil 301........Medieval Philosophy...............................................................(3)
Phil 302........Renaissance and Enlightenment...........................................(3)
Phil 303........Kant and the Nineteenth Century..........................................(3)

The additional 15 hours should normally include work complimentary to the student’s major or to some developed personal interest. Students may consult department advisers to develop a special concentration in the minor with an emphasis on philosophy of science, ethics in the professions, aesthetics in art and literature, etc.

**B.A. WITH MAJOR IN PHILOSOPHY AND RELIGION: RELIGION CONCENTRATION**

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. Religion Concentration Requirements:

30 hours, including:

- Rels 101........Introduction to Religion (West)..........................................(3)
- Phil 300........Classical Greek and Hellenistic Philosophy...........................(3)
- 3 hours from:
  - Religion Curriculum
  - Rels 220........Old Testament.................................................................(3)
  - Rels 250........East and West in Religions...............................................(3)
  - Religion Electives (15 must be at 300-400 level)....................................(21)

6 hours from an open-ended list of diversity/multicultural courses, which will include, but not be limited to, the following: (for other possibilities, check with advisers in the department).

A&S 225........Introduction to the Study of Women........................................(3)
A&S 250........African American Religious History.....................................(3)
Engl 365......Black American Writers..........................................................(3)
Geog 151......Human Geography.................................................................(3)
Hist 345........The Ancient Near East.......................................................(3)
IS 352........Native American Philosophic Thought......................................(3)
Phil 283........Asian Philosophy..................................................................(3)
Rels 203........World Religions....................................................................(3)
T&L 433........Multicultural Education..........................................................(3)

Some of these courses simultaneously fulfill other Philosophy/Religion requirements.

Level IV proficiency in a foreign language (i.e., 4 semesters) is strongly recommended.

**MINOR IN PHILOSOPHY AND RELIGION:**

**RELIGION CONCENTRATION**

Required 20 credits including:

- Rels 220........Old Testament.................................................................(3)
- Rels 203........World Religion.................................................................(3)
- Religion Electives (8 hours must be at 300-400 level)............................(14)

**Courses in Philosophy**

Since a major in philosophy involves a rigorous study of basic questions about human life and action, knowledge, truth, and values, it is recognized as providing a sound base for those who plan to continue their education in one of the professional specialties such as law, medicine, or the ministry. More recently, liberal arts degrees in fields which “make you think” have become increasingly valued in business and government. Majoring in philosophy also prepares a student for graduate work in any of the humanities (most notably philosophy); in most cases the graduate will pursue a doctoral degree to teach at the college level.

Students majoring in other fields who find themselves seriously interested in the theoretical aspects of their disciplines — e.g. ethics implications of practice, the functions of knowledge in the field, the legitimacy of methods — may want to consider a special concentration, minor, or second major in philosophy to explore that interest. The emphasis of such studies could be philosophy of science and technology, ethics in the professions (engineering, medicine), or aesthetics in literature or fine arts, to name a few examples.

101. Introduction to Philosophy. 3 credits. An introductory survey of the discipline of philosophy. Students will join the thoughtful search, in which philosophers have engaged through reading and discussion once ancient days, into the problems of reality (metaphysics), of truth and meaning (logic and philosophy of language), of moral standards (ethics), of knowledge (epistemology), of beauty (aesthetics), and other fundamental questions. F, S

215. Contemporary Moral Issues. 3 credits. An introduction to the problems connected with moral choice. This course examines the moral judgments that follow from the values held by a wide variety of people today on topics ranging from abortion to race, sexual behavior, the environment, etc. F, S

220. Introduction to Logic. 3 credits. A theoretical and practical introduction to the principles of reasoning — formal and informal, deductive and inductive. Students will study language and patterns of reasoning as vehicles for and obstacles to critical thinking. The central characteristics of deduction and validity, the role of hypotheses, inductive reasoning, probability estimates in scientific and quasi-scientific investigations and other models of critical thinking and their limits will be covered. F, S

283. Asian Philosophy. 3 credits. The main philosophical systems of India, China and Japan will be examined. F, S

300. Classical Greek and Hellenistic Philosophy. 3 credits. The ancient Greeks and Romans laid the foundations for even the most contemporary philosophy, and their ideas have had a continuing influence on all Western thought from their time to our own. This course attempts to examine those ideas and the reasons for their persistent relevance. F, S

301. Medieval Philosophy. 3 credits. Philosophy in Western Europe from the end of the Roman Empire to the early 15th Century as reflected in the writings of such thinkers as Boethius, Augustine, Abelard, Aquinas and Oxford. S

302. Renaissance and Enlightenment. 3 credits. Philosophy from the time of Petrarch (c. 1350) to that of the American Revolution as seen in the writings of such philosophers as Bruno, Bacon, Descartes, Spinoza and Hume. This is the period that sees the origins of modern thought. The implications of the work of the philosophers had an important role in shaping contemporary society, including the arts, literature, science, politics, and economics. F, S

303. Kant and the Nineteenth Century. 3 credits. Philosophy from the “Age of Reason” through the Industrial Revolution as reflected in the writings of Kant and other philosophers such as Hegel, Mill, Marx, and Nietzsche. S

304. Twentieth Century Philosophy. 3 credits. Contemporary developments in philosophy since the beginning of the 20th century. S

309. American Philosophy. 3 credits. A survey of major figures and movements in American philosophy. F
Courses in Religion

Religion at the University is not studied with the assumption that one faith is true and the others are false. Rather, all religions are seen as creative, living systems of beliefs and practices that enable men and women around the globe to make sense of their lives. By studying, and to a limited degree projecting ourselves into, these belief systems, we are better able to appreciate the outlooks and values of other cultures and gain new insight into what gives meaning and worth to our lives. At the University religion is studied as the Supreme Court recommended in a 1963 opinion: “It might be said that one’s education is not complete without the study of comparative religion or the history of religion and its relationship to the advancement of civilization.”

The study of religion is an integral part of a liberal education. It is also an enrichment for courses of study in preparation for careers in business, education, health care, social and psychological services. Courses in religion are a good preparation for postgraduate studies in law, medicine, and the ministry.

100. Introduction to Religious Inquiry. 3 credits. An introduction to the questions posed by those seeking religious truth as well as the methods and tools used by all religious traditions. This course is designed as a foundational entry into the academic study of religion, well suited for students with little or no training in the academic study of religion.

101. Introduction to Religion (West). 3 credits. A survey of the classical stories, rituals, and symbols of religious culture in Western civilization from ancient times to the present.

102. Introduction to Religion (East). 3 credits. A survey of the classical stories, rituals and symbols of religious culture with an emphasis on the traditions of the Orient from ancient times to the present.


203. World Religions. 3 credits. A general survey of the beliefs and practices of major world religions, with a focus on Islam, Hinduism, Buddhism, Taoism, and Native American traditions.

216. Women and Religion. 3 credits. An examination of the role of women’s experiences in religious thought, symbols and traditions, beginning with the centrality of female and mythic female figures, to the shift from matriarchy to patriarchy in the major cultures of the world and the consequential suppression of women’s experiences by patriarchal society, up to the current trends toward reformation and reconstruction of traditional religions by contemporary women theologians and religious thinkers.

220. Old Testament. 3 credits. A study of Israel’s awareness of itself as a faith community, from the Exodus to the post-Exilic period, investigation of the problems of multiple authorship, historiography, and archaeological evidence.

228. Early Christian Traditions. 3 credits. A survey of Christian traditions, from their origins in Judaism and Greek philosophy, continuing through the growth of Christian doctrine to the 4th to 5th centuries, and concluding with the church in the Middle Ages.


247. Introduction to Judaism. 3 credits. Comparative Jewish thought in cultural context and as manifest in Jewish literature. Topics to be studied include the sacred, the human community, the role of Israel, ethics, the Holocaust.

250. East and West in Religion. 3 credits. A critical and comparative study of people’s religious orientation between Eastern and Western traditions.

300. Jesus in Gospel and History. 3 credits. A study of one of the most significant personalities in religious history. Biblical and non-biblical texts which have defined and described Jesus will be examined.

301. Life and Religion of Paul. 3 credits. A study of the Pauline themes underlying the Christian faith as seen through the writings of this creative religious personality. Emphasis on current Pauline studies.

305. Mysticism. 3 credits. A study of mystics and their writings from the Eastern and Western traditions and the application of methods of religious inquiry into the presence of mystical phenomena.

309. Atheism, Theism, and Secularism. 3 credits. Exploration of the basic atheistic and astheistic options regarding the ultimate meaning and value of human life, with a study of the impact the rise of secularism has had on religious faith. On Demand.

315. Religion and Philosophy in India. 3 credits. A study of the major religions and philosophical systems of India. On Demand through the Marxist-Leninist-Mao Zedong thought of the People’s Republic of China.

320. Religion and Philosophy in India. 3 credits. A survey of the incredible range of beliefs and practices developed by the great religions and philosophical teachers of India.

322. Religious Ethics. 3 credits. Problems concerning the presuppositions of religious ethics and their application to personal moral issues and to such areas of community life as business, race relations, war and peace.

345. Death and Dying. 3 credits. An examination of various perspectives on death and dying in our own and other cultures with a view to coping with the problems of mortality and immortality. Medical, psychological, philosophical, and religious aspects contributing to an understanding of the meaning of death will be offered by resource people whose experience will lend assistance to the student’s confronting the reality of death and dying. Lecture and discussion.

360. Buddhism. 3 credits. A historical and critical survey of different Buddhist schools in India, China, Tibet, and Japan.

369. Selected Topics. 1-3 credits. A selected topic in the area of religious studies such as Atheism, Religion and Public Life, Lessons of the Holocaust, Religion and the Environment, Greco-Roman Religion, African American Religious History, Women Religious Writings.

410. Asian Religions in the United States. 3 credits. A survey of Asian religions in the U.S., with special attention paid to the ways in which Asian religions are becoming Americanized and American popular culture is becoming Easternized.

423. Psychology of Religion. 3 credits. The psychological significance of various types of religious experience, personal and social. An examination of classical psycho-
Physical Education and Exercise Science (PEXS)

R. Brinkert (Chair), M. Short, S. Short, Steen, Stiles, Watson and Whitehead

The Department of Physical Education and Exercise Science believes that individuals and society benefit from physical activity. Thus the mission of the Department is to promote enhanced quality of life through participation in physical activity, exercise, and sport for the people of North Dakota and beyond. Specifically, this mission is accomplished through (1) The provision of quality teacher education and other professional preparation programs at both the undergraduate and graduate level; (2) Creative and scholarly activity which leads to discovery and dissemination of professional and disciplinary knowledge; and (3) Contribution of professional expertise and talents as a service to the community, university and profession.

Graduates have the opportunity to pursue careers in physical education teaching, health and fitness education and management, and athletic coaching, or to continue their education in graduate studies.

Basic Instruction Courses — the Department of PEXS also provides basic instruction for all students of the University in a wide variety of sport, aquatics, dance, and fitness classes. Activity courses in physical education may count toward the hours required for graduation. These credit hours may be earned by enrolling in PEXS 101, 102 or 103. In some cases, equipment is provided by the department; however, there are fees assessed for certain specified activities.

College of Education and Human Development

UNDERGRADUATE PHYSICAL EDUCATION PROGRAM:

The physical education program provides a major or a minor with a related area option.

Please contact the Department for changes in program requirements or options.

A. Major in Physical Education — consists of a core of courses and a teacher education option or the same core of courses with a related area option which allows a student to study physical education and a related subdiscipline. The teacher education option is designed for those students who wish to teach physical education in grades K-12. The related area option is for those students who wish to find employment in the commercial fitness field.

B. Minor in Athletic Coaching — offered to students who wish to prepare for athletic coaching.

C. Minor in Health Education — preparation for school health teaching.

B.S. IN PHYSICAL EDUCATION

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. The College of Education and Human Development Requirements (see College listing).

III. Prerequisite courses, 19 hours including: (Some credits may be used to satisfy the General Education requirements)

Chem 115 & 115L Introductory Chemistry and Laboratory (4)
Psy 111 Introduction to Psychology (3)
Soc 110 Introduction to Sociology (3)
Anat 204, 204L Anatomy for Paramedical Personnel and Laboratory (5)
PPT 301 Mechanics of Human Physiology (4)

IV. Required curriculum, 32 hours including:

PEXS 107 Introduction to Physical Education (3)
PEXS 223 Movement Performance and Analysis (12)
PEXS 223L Movement Performance and Analysis Lab (3)
PEXS 322 Introduction to Teaching (3)
PEXS 332 Biomechanics (4)
PEXS 401 Exercise Physiology (4)
PEXS 402 Exercise Physiology (3)
PEXS 440 Sport Psychology (3)

V. One of the following options:

A. Teacher Education/Certification Option

Students seeking certification to teach physical education in grades K-12 must complete the requirements for the B.S. in Physical Education and the Secondary Education requirements in the Department of Teaching and Learning. See the Department of Teaching and Learning section.

Admission to Teacher Education is required. Students normally seek admission to Teacher Education in their sophomore year while enrolled in T&L 325. See the Department of Teaching and Learning section.

Required 22 hours including:

PEXS 205 Physical Education for the Elementary Grades (3)
PEXS 310 First Aid and CPR (2)
PEXS 323 Intro to Teaching in Phys. Ed. and Sport Settings (3)
PEXS 323L Lab — Introduction to Teaching (1)
PEXS 355 Motor Development (3)
PEXS 400 Methods and Mat. for Teaching Secondary Phys. Ed (included in Secondary Education Certification Sequence, T&L) (3)
PEXS 400L Lab — Methods and Materials (1)
PEXS 403 School Health Education (2)
PEXS 404 Adapted Activities Programming (2)
PEXS 406 Strategies for Teaching Phy. Ed. in the Elem. School (3)
PEXS 440L Lab — Strategies for Teaching/Elementary School (1)
PEXS 487 Senior Teaching Seminar (1)

Required in the Department of Teaching and Learning 30 hours consisting of 14 hours of Secondary Education Certification Preparation Sequence and 16 hours of student teaching. See the Department of Teaching and Learning section.

B. Related Area Option

1. Students will complete a major and/or minor in a subject area related to physical education.

2. The remaining credit hours to satisfy the University minimum Graduation Requirements of 125 credits will be chosen from elective courses with the consent of the adviser.

MINOR IN ATHLETIC COACHING

Required 27 credits, including:

PEXS 109 Introduction to Coaching (1)
PEXS 207-207L Prevention & Care of Injuries (3)
PEXS 223 Movement Performance and Analysis (3)
PEXS 323 Intro to Teaching in Physical Ed. and Sport Settings (3)
PEXS 323L Lab — Intro to Teaching in Phys. Ed. and Sport Settings — Lab (1)
PEXS 325 Youth and Children in Sport (3)
PEXS 341 Organization & Administration of Athletics (2)
PEXS 423 Coaching Methods (2 hours each to coincide with sport specific PEXS 223s) (6)
PEXS 486 Practicum in Coaching (2)

Students interested in a Minor in Athletic Coaching should consult with an adviser in Physical Education before beginning the Minor. It is necessary to ensure that courses are appropriately tracked toward the practicum.
MINOR IN HEALTH EDUCATION

Required 14 hours, including:

- PEXS 310 First Aid and CPR                     (2)
- PEXS 327 Fitness for Life                        (3)
- PEXS 403 School Health Education                  (2)
- Psy 250 Developmental Psychology                  (4)
- Nut 240 Fundamentals of Nutrition                 (3)
- and 7-10 hours to include one course from the following 3 groups:
  - Biol 124 Environmental Science                (2)
  - Geol 240 Introduction to Environmental Issues (3)
  - Biol 250 Human Sexuality                     (3)
  - T&l 252 Child Development                     (3)
  - Soc 355 The Family                           (3)
  - PPT 410 Drugs Subject to Abuse                (2)
  - Soc 355 Drugs and Society                    (3)
  - Swk 410 Drugs: Addiction Dynamics            (2)

Special topics and other courses may be substituted only with Physical Education advisor's approval.

Students interested in a Minor in Health Education should consult with an advisor in Physical Education before beginning the Minor.

B.S.ED. WITH A COMBINED MAJOR IN ELEMENTARY AND PHYSICAL EDUCATION

For curriculum outline see the Department of Teaching and Learning section.

Physical Education Courses

101. Physical Education. 1 credit. Instruction in aquatics, dance, fitness, individual sports, team sports, and outdoor pursuits at the introductory level. F,S,SS

102. Physical Education. 1 credit. Prerequisite: PEXS 101 in the same activity or consent of the instructor. Instruction in aquatics, dance, fitness, individual sports, team sports, and outdoor pursuits at the intermediate level. F,S

103. Physical Education. 1 credit. Prerequisite: PEXS 102 in the same activity or consent of the instructor. Instruction in aquatics, dance, fitness, individual sports, team sports, and outdoor pursuits at the advanced level. F,S

109. Introduction to Coaching. 1 credit. An introduction and overview of relevant philosophy, sport psychology, sport pedagogy, sport physiology, sport medicine, and sport management issues confronting coaches. Coaching is presented with emphasis on effective instructional techniques and coaching principles based upon scientific knowledge. F On Demand

110. Sports Officiating. 1 credit. Knowledge of the rules and techniques for officiating various sports. Offered by sport; credit is repeatable by sport. On Demand

205. Physical Education for the Elementary Grades. 3 credits. A study of contemporary programs in elementary physical education. Emphasis on appropriate movement experiences for children. On Demand

206. PEXS Workshop. 1 credit. Each workshop will emphasize an area related to PEXS. Course may be repeated as long as content varies. On Demand

207. 207L. Prevention and Care of Injuries. 3 credits. An overview of the scope of athletic training with emphasis on injury management and preventative measures. F,S

223. Movement Performance and Analysis. 1 credit, repeatable to 12. Prerequisite: PEXS 101 or performance equivalence in appropriate activity. Development of performance, performance analysis and knowledge as they apply to aquatics, dance, fitness, individual sports, team sports, and outdoor pursuits. Professional preparation courses for PEXS majors. F,S

276. Motor Learning. 3 credits. Co-requisite: PEXS 276L. Consideration of various factors which may affect learning and performance in human movement activities. S

309. Water Safety Instruction. 2 credits. Prerequisite: Current Senior Lifesaving Certificate. Scientific movement principles, theories and techniques as they apply to the teaching and conduct of aquatic activities. Laboratory teaching assignments. S

318. First Aid and CPR. 2 credits. Recommended Advanced First Aid and CPR practices for the care of persons who have been injured or suddenly become ill. F,S

323. Introduction to Teaching in Physical Education and Sport Settings. 3 credits. Prerequisite: PEXS 107 & 223. Correquisite: PEXS 323L. Strategy for classroom management, planning, instruction, and assessment of teacher and student behaviors. Special emphasis on systematic development of a variety of teaching skills through practice and feedback in individual and small group situations. On Demand

328. Introduction to Teaching in Physical Education and Sport Settings Laboratory. 1 credit. Prerequisites: PEXS 107 & 223. Correquisite: PEXS 323L. Supervised experiences in laboratory and field settings for the purpose of developing teaching skills for physical education and sport settings. On Demand

325. Youth and Children in Sport. 3 credits. Analysis of research findings in sport studies, sport psychology and sport sociology with applications to coaching children and youth in sport. On Demand

326. Fundamentals of Physical Conditioning. 3 credits. A study of the basic knowledge, principles, and methods of physical conditioning for health and fitness benefits, and for athletic performance improvement. On Demand

327. Fitness for Life. 3 credits. A classroom course focusing on advanced concepts of lifetime fitness and wellness from a consumer perspective. Emphasis is on the development of personal programs for fitness and wellness. On Demand

332. Biochemistry. 4 credits. Prerequisite: Anat 204, 204L. The study of human movement with special emphasis on those movements related to sport and physical activity. F

341. Organization and Administration of Athletics. 2 credits. Principles and practices for management of the interscholastic athletic program. F

355. Applied Motor Development. 3 credits. Changes in motor performance which occur with age, physical and mental development as they relate to these changes. On Demand

375. Fundamentals of Group Exercise Instruction. 3 credits. Prerequisite: PEXS 326. Fundamental knowledge and practical skills needed to lead a group exercise class. On Demand

376. Professional Skills in Personal Training. 3 credits. Prerequisite: PEXS 326. The fundamental knowledge and skills necessary to provide personal training for individuals and/or small groups. On Demand

385. Practicum. 2 credits. Prerequisites: PEXS 222 and 321. Independent and group study of professional placement and leadership in recreation and leisure settings. Practical experiences in recreation settings within the community. Includes lectures, site visits, and fieldwork hours. F,S

397. Cooperative Education in PEXS. 1-4 credits, repeatable to 16. Prerequisite: PEXS 107 or 201. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement among student, department, and employer. S/U grading only. F,S,SS

400. Methods and Materials for Teaching Physical Education in the Secondary School. 3 credits. Prerequisites: PEXS 406 and admission to Teacher Education. Corequisite: PEXS 404L. Instructional skills and curriculum analysis for secondary school physical education. On Demand

401. Methods and Materials for Teaching Physical Education in the Secondary School—Lab. 1 credit. Prerequisites: PEXS 406L. Instructional skills and curriculum analysis for secondary school physical education. On Demand

403. Sport Sociology. 3 credits. Prerequisite: Soc 110. The critical exploration of the function of sports in American culture, in an interdisciplinary fashion, with a focus on the contemporary scene. F

402. Exercise Physiology. 4 credits. Prerequisite: PPT 310. The acute and chronic effect of the type, intensity and duration of exercise on physiological function. F

403. School Health Education. 2 credits. Provides prospective health educators with a sensory look at health curriculum construction and investigation of different methods, devices and classroom techniques. S

404. Adapted Activities Programming. 2 credits. Information about specific handicaps and adaptations of various activities that individuals may participate in. S

406. Strategies for Teaching Physical Education in the Elementary School. 3 credits. Prerequisites: 203, 325, and admission to Teacher Education. Co-requisite: PEXS 406L. The development of skills and knowledge related to teaching physical education to young children. On Demand

406L. Strategies for Teaching Physical Education in the Elementary School—Lab. 1 credit. Prerequisites: PEXS 326L, 205, and admission to Teacher Education. Co-requisite: PEXS 406L. Supervised experiences in the elementary school for the purpose of developing teaching skills for physical education and sport settings. On Demand

423. Coaching Methods. 2 credits. Prerequisite: PEXS 223 in same sport. Repeatable with different sports to a maximum of 10 credits. Methods employed in coaching specific sports. F,S

426. Exercise Testing and Prescription. 3 credits. Prerequisites: PEXS 326 and 402. Theory and practice of administering exercise and fitness tests, and using the results in exercise prescription and programming. On Demand

440. Sport Psychology. 3 credits. Prerequisite: Psyc 111. Examination of psychological constructs influencing the competitive sport process and physical activity. S

455. Special Topics in PEXS. 1-4 credits repeatable to 9. Specialized topics related to physical education, health and recreation. On Demand

460. Field Experience in PEXS. 1-8 credits. Prerequisite: Consent of instructor and upper division status. Placement of student in a practical setting under university faculty supervision. F,S

485. Internship. 4-12 credits. Prerequisite: Physical Education majors only. Development of professional skills by working directly with established fitness/wellness, health and human service organizations under the supervision of professionals and faculty. S/U grading only. F,S,SS

486. Practicum in Coaching. 2 credits. Prerequisites: PEXS 423 in the assigned sport in which the student will coach. Supervised experiences in a school setting for the purpose of developing skills and techniques for coaching. F,S

487. Senior Teaching Seminar. 1 credit. Correquisite: T&l 487. A critical analysis of problems, professional obligations and careers in teaching physical education. F

495. Directed Studies in Physical Education. 1-4 credits. Prerequisite: Consent of the instructor. An in-depth study in a subject area selected by the student under tutorial supervision. F,S

Physical Education and Exercise Science 159
Physical Therapy (PT)

T. Mohr (Chair), Danks, Decker, Frappier, Flom-Meland, Jeno, Johnson, LaBrecque, Mabey, P. Mohr, Reiling, Romanick, and Teetzen

The Department of Physical Therapy offers the clinically-oriented, entry-level Doctor of Physical Therapy (DPT) degree. Students interested in the physical therapy program at UND should stay in contact with UND-PT to keep informed of the pre-professional and professional curriculum. Our web site is www.medicine.nodak.edu/pt.

Physical therapists provide services to patients who have impairments, functional limitations, and disabilities. Physical therapists assist patients in restoring health, alleviating pain, examining, evaluating, and diagnosing changes in physical function and health status resulting from injury, disease, or other causes. Physical therapists are also involved with prevention, intervention, and the promotion of health and wellness, and fitness. They are employed by hospitals, outpatient clinics, rehabilitation centers, skilled nursing facilities, home care, school systems, industrial settings, athletic facilities, and in private practice.

Pre-Physical Therapy Requirements

Prior to admission, a minimum of 90 semester hours of credit from an approved college or university is required. Students should be broadly educated in the sciences and humanities. The Department of Physical Therapy recognizes that, since physical therapy deals with people, an understanding of literature, art, history, ethics, and philosophy is an adjunct to a physical therapist. Science and humanities are both viewed as necessary for the practice of physical therapy.

The following list of courses and credits indicates the core prerequisites all applicants must complete prior to admission to the physical therapy program. It is strongly recommended that students be computer literate prior to entering the professional program. Students may take additional electives from any field of study; however, the depth of the pre-physical therapy education should demonstrate that students have progressed from simple to complex studies in at least one content area. This requirement might typically be demonstrated by a discipline major, but in any case should demonstrate a basic comprehensiveness and integrity of study within a particular content area. This does not suggest that a separate undergraduate degree be awarded; however, the breadth and depth in a discipline should be demonstrated. Course credits equivalent to a minor (i.e., approximately 20 credits at UND) in a particular discipline could accomplish this requirement. The prospective student should include some credits from upper level courses (i.e., 300 and 400 numbers).

See Physical Therapy in the Graduate Section.

Physics (Phys)

T. Chen (Chair), Dewar, Kim, Lykken, Marasinghe, Rao, Schwalm, Wagner, Watson and Young

The Department of Physics offers a major and minor in physics. Majors may elect to earn a general physics degree or to specialize in one of four tracks. The five physics degree options are:

1. No specialization
2. Applied Physics Track
3. Astrophysics Track
4. Computers in Physics Track
5. Materials Science Track

Each track leads to a Bachelor of Science with Major in Physics, awarded through the College of Arts and Sciences. A total of 125 credits is required for graduation. In addition to other University Graduation Requirements and the courses specified for one of the five options listed below, all Physics majors must complete successfully the following set of core courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>Phys 251</td>
<td>University Physics I/Laboratory</td>
</tr>
<tr>
<td>Phys 252</td>
<td>University Physics II/Laboratory</td>
</tr>
<tr>
<td>Phys 253</td>
<td>University Physics III/Laboratory</td>
</tr>
<tr>
<td>Phys 317, 318</td>
<td>Mechanics I, II</td>
</tr>
<tr>
<td>Phys 324</td>
<td>Thermal Physics</td>
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<tr>
<td>Phys 325</td>
<td>Optics</td>
</tr>
<tr>
<td>Phys 325L</td>
<td>Optics Laboratory</td>
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<tr>
<td>Phys 327, 328</td>
<td>Electricity and Magnetism I, II</td>
</tr>
<tr>
<td>Phys 415</td>
<td>Research Experience</td>
</tr>
<tr>
<td>Phys 428</td>
<td>Advanced Physics Laboratory</td>
</tr>
<tr>
<td>Phys 431, 432</td>
<td>Quantum Mechanics I, II</td>
</tr>
<tr>
<td>Chem 121, 122</td>
<td>General Chemistry I, II</td>
</tr>
<tr>
<td>Chem 121L, 122L</td>
<td>Laboratory Corequisites</td>
</tr>
<tr>
<td>Math 185, 186, 265</td>
<td>Calculus I, II</td>
</tr>
<tr>
<td>Math 226</td>
<td>Elementary Differential Equations</td>
</tr>
<tr>
<td>Math 352</td>
<td>Partial Differential Equations</td>
</tr>
<tr>
<td>Math 315</td>
<td>Computational Mathematics II</td>
</tr>
</tbody>
</table>

To provide proper advisement, the Physics Department requires its majors to meet with their physics advisors prior to registration each semester. This ensures each student is enrolled in appropriate classes and helps the department schedule certain courses in a timely manner. A hold is placed on registration for physics majors until this advisement session takes place. It is the student’s responsibility to schedule the advisement session.

Beyond completion of the core listed above, and the general education requirements, all physics majors must complete one of the following options, together with additional electives for a total of 125 credits.

I. General Physics option: This is a general physics degree offering maximum flexibility. It is appropriate for students who may seek advanced degrees, for instance, or who are interested in medical school. Beyond the core, the student must complete an additional 9 credits of Physics numbered above 300. No more than 3 credits of these 9 may be in Special Problems, Physics 492.

II. Applied Physics track: This choice will provide interdisciplinary training in applied physics and applied electronics with emphasis on instrumentation and measurement techniques. The aim is to prepare the student to work as part of a research team in an industrial, governmental or academic setting. In addition to the core, the student must complete:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EE 266</td>
<td>Circuit Analysis</td>
</tr>
<tr>
<td>EE 321</td>
<td>Electronics I</td>
</tr>
<tr>
<td>EE 308</td>
<td>Electronics Lab</td>
</tr>
<tr>
<td>Phys 402</td>
<td>Computers in Physics</td>
</tr>
<tr>
<td>EE 452</td>
<td>Microprocessors</td>
</tr>
</tbody>
</table>

In addition, students electing the applied physics track should select an instrumentation project as a means of satisfying the research core requirement, Physics 415.

III. Astrophysics track: This option is for students with special interest in astronomy, astrophysics, space exploration or astropace applications. The following are required:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys 110, 110L</td>
<td>Intro. Astronomy Lab</td>
</tr>
<tr>
<td>Phys 354</td>
<td>Nuclear Physics</td>
</tr>
<tr>
<td>Phys 460</td>
<td>Intro. Astrophysics I</td>
</tr>
<tr>
<td>Phys 461</td>
<td>Intro. Astrophysics II</td>
</tr>
</tbody>
</table>
To satisfy the research requirement, Phys 415, students in the astrophysics track should select an approved astrophysics project.

IV. Computer in Physics track: This course provides extensive experience using computers for running experiments, analyzing data, doing computer simulations and calculations in physics. The student should be prepared to learn programming languages. The following are required.

1. Sci 160 ...... Computer Sci. 1 ... (4 cr)
2. Sci 161 ...... Computer Sci. II ... (4 cr)
3. Phys 402 ...... Computers in Phys ... (3 cr)

For the Computers in Physics track, students should seek out computational research projects for Phys 415, or laboratory projects involving computer instrumentation.

V. Materials Science track: This option provides the strongest foundation in solid state and materials science. Required are:

1. Phys 320 ...... Intro. Materials Sci ... (3 cr)
2. Phys 420 ...... Topics in Materials ... (3 cr)
3. Phys 437 ...... Solid State Phys ... (3 cr)

Students in this track should select approved research projects in materials science as a means of satisfying the Phys 415 requirement.

MINOR IN PHYSICS

Required 20 credits in Physics. The specific courses should be in consultation with the department.

Courses

110/110L. Introductory Astronomy. 3 credits/1 credit. An introductory study of the universe: The solar system, stars, stellar evolution, galaxies, black holes, big bang cosmology, and the accelerating universe. The astronomy laboratory 110L is optional for 1 credit.

130/130L. Natural Science—Physics. 4 credits. For non-science majors, this is a hands-on, inquiry-based course on the workings of science. Emphasis is on critical thinking and the use of the scientific method. Topics will include: electricity, force, motion and energy. The laboratory is a corequisite of this course. F, S

140. Physics for Poets. 3 credits. An introduction to the fundamental concepts of physics, especially those developed in the twentieth century. A knowledge of elementary algebra is recommended, but the course is designed for students with a limited mathematical background. No laboratory. On Demand.

150. Physics for Aerospace Sciences. 4 credits. Corequisite: Phys 150L. An introduction to the principles and concepts of physics as they apply to the study of aerospace sciences. Topics: Newtonian mechanics, gravitation, work, energy, fluids, electricity and magnetism. Students in this course should select an approved astrophysics project. To satisfy the research requirement, students in the astrophysics track should select an approved astrophysics project.

150L. Physics for Aerospace Sciences Laboratory. 1 credit. Corequisite: Phys 150.

161/161L, 162/162L. Introductory College Physics I & II. 8 credits. An introduction to the principles and concepts of physics with the application of minimal mathematics, sufficient to show the logical progression from one topic to the next. General physics for those who do not plan to take advanced course in science. Topics: Newtonian mechanics and gravitation, work and energy, solids and fluids, vibrations and waves, electricity and magnetism, light and optics. The laboratory is a corequisite of each course. F, S

171/211L. College Physics I. 3 credits. Prerequisites: Pre Phys 211, Math 103. For Phys 212, Phys 213. The non-calculus general physics course sequence recommended for pre-medical or pre-professional students. Topics: Newtonian mechanics and gravitation, work and energy, solids and fluids, basic kinetic theory, equations of state and the first and second laws of thermodynamics. The laboratory is a corequisite for Phys 251. F, S

325/325L. University Physics I/Laboratory. 4 credits. Prerequisite: Math 165. Corequisite: Phys 251L. The University physics sequence is for students majoring in science and engineering. Topics normally covered in Phys 251 include Newtonian mechanics and gravitation, work and energy, rotational dynamics, vibrations and waves, mechanics of solids and fluids, basic kinetic theory, equations of state and the first and second laws of thermodynamics. The laboratory is a corequisite for Phys 251. F, S

252/252L. University Physics II/Laboratory. 4 credits. Prerequisite: Math 166. Phys 251 and 251L. Corequisite: Phys 252L. Topics normally covered include electricity and magnetism, electromagnetic waves, light and geometrical optics. The laboratory is a corequisite for Phys 252. F, S

253/253L. University Physics III/Laboratory, 4 credits. Prerequisites: Math 265. Phys 252 and 252L. Corequisite: Phys 253L. Modern physics, a survey covering the major developments of the 20th and 21st centuries. Topics normally covered include theory of relativity, discovery of quantum phenomena, basic quantum mechanics, theory of atomic, nuclear and solid-state physics, statistical physics, quantum fluids and superconductivity, fundamental forces and the physics of elementary particles. This course is a prerequisite for most courses in advanced physics. The laboratory is a corequisite for Phys 253. F, S

294. Selected Topics in Physics, 1 credit. Prerequisite: 8 hours of College Physics or consent of instructor. May be repeated to a maximum of 4 hours. Credit may not be applied toward a major in physics. On Demand.

317. Mechanics I. 3 credits. Prerequisites: Phys 252, Math 266 or approval of department. Motion of a single particle, central forces and simple oscillatory systems. S/E

318. Mechanics II. 3 credits. Prerequisites: Phys 317 or approval of instructor. A continuation of Phys 317. Rigid body motion, Lagrangian and Hamiltonian dynamics, relativity, continuum mechanics, F/S

320. Introductory Materials Science. 3 credits. Prerequisite: Phys 253 or approval of department. An introduction to solid state physics with emphasis on applications. F/S

324. Thermal Physics. 3 credits. Prerequisites: Phys 253 or approval of instructor. Thermodynamics with an introduction to statistical physics. F/S

325. Optics. 3 credits. Prerequisites: Phys 253 or approval of department. Geometrical and physical optics with an emphasis on physical optics. S

325L. Optics Laboratory. 1 credit. Corequisite: Phys 325. Laboratory to accompany Physics 325. S

327. Electricity and Magnetism I. 3 credits. Prerequisites: Phys 253 or approval of instructor. A quantitative treatment of electro-magnetic theory with an introduction to Maxwell's equations. F/S


402. Computers in Physics. 3 credits. Prerequisites: Phys 252 and knowledge of a higher-level computer programming language, or consent of instructor. Computer applications in physics, including data analysis, numerical simulation, symbolic and algebraic programming, parallel computing, computer interfacing and experimental physics applications.

415. Research Experience. 3 credits. Prerequisite: Phys 253 or advisor's consent. The students will engage in research activities of a UND physics faculty member or may take part in a physics department approved external research program such as an NSF-funded REU program.

420. Advanced Topics in Materials Science. 3 credits. Prerequisite: Phys 320. A discussion on the application of physics to design, synthesis and characterization of materials of current interest.

428. Advanced Physics Laboratory. 2 credits. Prerequisite: Phys 253 or approval of instructor. Advanced undergraduate experiments in physics, using modern techniques and instrumentation. Classic experiments leading to the current understanding of physical theory. F

431. Quantum Mechanics I. 3 credits. Prerequisite: Phys 253 or approval of instructor. An introduction to quantum mechanics with applications to atomic structure. F/S

432. Quantum Mechanics II. 3 credits. Prerequisite: Phys 431 or consent of instructor. Further development of basic quantum theory with application to atomic, molecular, solid state and nuclear physics. S

434. Nuclear Physics. 3 credits. Prerequisite: Phys 253 or approval of instructor. Introduction to the theory of atomic nuclei, fundamental forces and sub-atomic particles. On Demand.

437. Introduction to Solid State Physics. 3 credits. Prerequisite: Phys 253 or approval of instructor. A general introduction to solid state phenomena. On demand.


461. Introduction to Astrophysics II. 3 credits. Prerequisite: Phys 460. An introduction to astrophysics course concerning the nature of stars and the sun.

492. Special Problems, 1-3 credits. Prerequisite: approval of the department. F, S

499. Senior Honors. 1-15 credits.

Political Science (Pols)

M. Kweit (Chair), Jendrysik, Jensen, R. Kweit, Light and Sum

The Department of Political Science and Public Administration offers undergraduate programs leading to the Bachelor of Arts with a major or minor in Political Science and to the Bachelor of Science in Public Administration or a minor in Public Administration. The B.S.A. is offered through the College of Arts and Sciences and the B.S.P.A. through the College of Business and Public Administration. (See Public Administration listed separately in this catalog.) The undergraduate Political Science program is designed to provide students with a broad background in the liberal arts. The Public Administration program also has a core of liberal arts courses combined with courses from the administrative sciences. The communication and analytical skills emphasized in both programs prepare students for employment...
in the public, not-for-profit, and private sectors; graduate studies; law school; and teaching.

The Department also offers a graduate program through the Graduate School leading to the Masters of Public Administration. Some students may qualify for a 5-year undergraduate Political Science/Master of Public Administration (MPA) program. See the Graduate section for admission criteria.

College of Arts and Sciences

B.A. WITH MAJOR IN POLITICAL SCIENCE

Required 125 credits (of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. The Following Curriculum:

57 major hours, including:

Pols 115.................. American Government I ............................................(3)
Pols 220.................. International Politics .................................................(3)
Pols 225.................. Comparative Politics ..................................................(3)
Pols 250.................. Politics of Public Administration ................................(3)
Pols 300.................. Introduction to Research Methods ................................(3)
Pols 311.................. Political Thought I .......................................................(3)
Pols 312.................. Political Thought II ......................................................(3)
Pols 405.................. Political Behavior ..........................................................(3)
Pols 432.................. Public Policy Making Process .....................................(3)
Pols 495.................. Senior Colloquium .........................................................(1)
Pols .................. Electives .............................................................................(6)

Required in other departments:

Level II proficiency in a foreign language

Economics 210 Introduction to Business and Economic Statistics or equivalent (3 credits)
Economics 202 Introduction to Macroeconomics (3 credits)

MINOR IN POLITICAL SCIENCE

Required 21 credits, including:

Pols 115.................. American Government I ............................................(3)

Select 6 hours from:

Pols 220.................. International Politics .................................................(3)
Pols 225.................. Comparative Politics ..................................................(3)
Pols 250.................. Politics of Public Administration ................................(3)

Select 6 credits from:

Pols 300.................. Research Methods .......................................................(3)
Political Theory (Pols 311 or 312 or 318) .................................................(3)
Constitutional Law (Pols 305 or 306) .........................................................(3)
Pols 405.................. Political Behavior ..........................................................(3)

Required 6 additional credits of electives from 300 level and above courses in Political Science which may include the courses listed.

Courses

115. American Government I. 3 credits. An introduction to political science through the study of the American political system: The Constitution; the political processes; the structure, powers and procedures of the Presidency, Congress, and the judiciary. S

116. State and Local Government. 3 credits. Structure, function and problems of state and local government; executive, legislative, and judicial processes; federalism and metropolitan government. F,S

220. International Politics. 3 credits. An introduction to international politics with emphasis on the international system, the major actors, the struggle for power, and the struggle for order. S

225. Comparative Politics. 3 credits. An introduction to comparative politics with emphasis on the democratic systems of Europe. F

250. Politics of Public Administration. 3 credits. Prerequisite: Pols 115. Introduction to the development of public administration in the United States and to the concepts and methods used in its practice. The political aspects of the public bureaucracy and contemporary issues are also highlighted. F

300. Introduction to Research Methods. 3 credits. General consideration of research methods and data analysis in political science and the social sciences. F

American Constitution — Governmental Powers. 3 credits. American Constitution studied in light of U.S. Supreme Court decisions and interpretations; focus on government powers, federal relationships, and economic regulation. F

American Constitution — Civil Liberties. 3 credits. Prerequisite: Pols 115. Analyzes U.S. Supreme Court decisions and interpretations which focus on civil liberties, equal protections, due process, First Amendment rights. S

308. Intergovernmental Relations. 3 credits. Analyzes the growing interrelationship of federal, state and local governments with emphasis on financial aspects. F

309. The Legislative and Executive Process. 3 credits. A survey of the organization, functions and interaction of the American legislative and executive branches of government. S

311. Development of Political Thought I. 3 credits. Classical political thought to the seventeenth century with emphasis on the thought of Plato, Aristotle, Cicero, St. Augustine, St. Thomas Aquinas, and Machiavelli. F

312. Development of Political Thought II. 3 credits. Political thought from the seventeenth century to the present with emphasis on the thought of Hobbes, Locke, Rousseau, Hume, Burke, Hegel, and Marx. S

318. American Political Thought. 3 credits. A historical analysis of the major thinkers and of the streams of thought which molded the political life and institutions of the United States from the Founding Fathers to the present. F

320. Foreign Policies. 3 credits. Examination of the roles of major powers in the international system, with emphasis on the foreign policies of the United States and other major powers. S

323. Issues in Comparative Politics. 3 credits. Repeatable to 6. Examination of contemporary issues in comparative politics with particular emphasis on the dynamics of change in political systems. F

393. Problems in Political Science. 1-3 credits. Maximum 6 credits. Students study special topics under the direction and supervision of a member of the staff. Prior consent of instructor required before enrollment. F,S

397. Cooperative Education. 1-6 credits. Repeatable to 12 credits. Prerequisite: 3.00 GPA; 12 hours in Pols, course related to cooperative experience; permission of department. Compensated on-the-job experience in various areas of political science. S

404. Urban Politics and Administration. 3 credits. Prerequisite: Pols 115. Analysis of the socio-economic context of urban America and its impact on politics, policy, and administration. One per year. F,S

405. Political Behavior. 3 credits. Prerequisite: Pols 115. A review of the role of the public in a democracy focusing on the formation and content of public opinion, the means of communicating that opinion to government, and the impact of that opinion on policy. F

432. Public Policy Making Process. 3 credits. Prerequisite: Pols 115. Two-thirds of the class is devoted to understanding the stages of the policy process: (1) Problem Identification and Agenda Setting; (2) Policy Formulation; (3) Policy Adoption; (4) Policy Implementation; and (5) Policy Evaluation. The last three apply the model to substantive policy areas such as health, environment, education. S

433. The Administrator and Public Affairs. 3 credits. Designed to make students aware of the political and community implications of public administration in a democratic society. Reviews and analyzes the political environment of public administration and considers various techniques for accommodating democratic influences in the administrative process. S

437. Administrative Processes. 3 credits. Prerequisite: Pols 250. Explanation of theoretical and practical aspects of personnel and financial management in the public sector. S

480. Administrative Internship. 2-6 credits. Prerequisites: 3.00 GPA; 12 hours in Pols; course related to internship experience; permission of department. On-the-job training in a governmental position with final report and analysis of the agency by the intern. Prior approval of instructor required before enrollment. S/U grading only. F

491. Readings in Political Science. 1-4 credits. Selected readings with oral and written reports. Consent of instructor required prior to enrollment. F,S

493. Professional Project in Public Administration. 3 credits. Prerequisite: Senior standing. A capstone course in Public Administration where students will independently develop a paper under supervision, which demonstrates the ability to use the knowledge and skills of public administration to address public administrative issues. This course is designed for Public Administration majors only. S

495. Senior Colloquium. 1 credit. Prerequisite: Senior standing. Corequisite: Pols 432. A capstone course in Political Science designed to integrate the subareas of the discipline. The development of the discipline, its great thinkers, and current directions will be examined. This course is designed for majors only. S

497. Senior Tutorial. 2 credits. Prerequisite: Senior or consent of instructor. Corequisite: Pols 432 and Pols 495. A course which requires mentoring introductory students in Political Science. Further, students will undertake supervised independent research culminating in a major paper. This course is designed for majors only. S

Psychology (Psyc)

Weatherly (Chair), Antes, Bennett, Ferraro, Grabe, Holm, King, McDonald, Peters, Petros, Terrace, Tyler and Wenzel

College of Arts and Sciences
The Department of Psychology offers B.A. and B.S. degrees in psychology, and also a minor in psychology. There is a core curriculum, described below, that all majors must complete. In addition, students who major in psychology may choose to complete an emphasis, or an area of focus within psychology. The emphases are described after the listing of the core curriculum requirements.

**B.A. OR B.S. WITH MAJOR IN PSYCHOLOGY**

Required 125 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4-year institution) including:

**I. General Education Requirements (see University GER listing).**

**II. The Following Curriculum**

**36 major hours, including:**

- **Psyc 111** Introduction to Psychology .............................................................. (3)
- **Psyc 241** Introduction to Statistics ................................................................. (4)
- **Psyc 303** Research Methods in Psychology .................................................. (4)
- **Psyc 405** History and Systems of Psychology ................................................. (3)

**One course from Area A:**

- **Psyc 433** Psychology of Learning ................................................................. (4)
- **Psyc 435** Physiological Psychology ............................................................... (4)
- **Psyc 436** Perception ....................................................................................... (4)
- **Psyc 457** Psychophysiology ............................................................................ (4)
- **Psyc 459** Cognitive Psychology ..................................................................... (4)

**One course from Area B:**

- **Psyc 421** Individual and Group Differences .................................................... (3)
- **Psyc 451** Advanced Developmental Psychology ............................................. (3)
- **Psyc 460** Advanced Social Psychology ............................................................ (3)
- **Psyc 465** Multicultural Psychology ................................................................. (3)
- **Psyc 470** Introduction to Clinical Psychology ................................................ (3)

**Additional requirements for B.A.**

- Level II proficiency in a foreign language
- **Math 103** College Algebra .............................................................................. (3)
- **Math 104** Finite Mathematics ......................................................................... (3)

**Any two of the following:**

- **Biol 150 & 150L General Biology I & Laboratory** ........................................ (4)
- **Biol 151 & 151L General Biology II & Laboratory** ........................................ (4)
- **Anat 204, 204L Anatomy for Paramedical Personnel (with laboratory)** .... (5)

**Additional requirements for B.S.**

- Eight additional hours of biological or physical sciences or calculus.

**MINOR IN PSYCHOLOGY**

Required 20 credits, including:

- **Psyc 111** Introduction to Psychology .............................................................. (3)
- **Psyc 250** Developmental Psychology ............................................................ (3)
- **Psyc 270** Abnormal Psychology .................................................................... (3)

**Students receiving teaching certification in secondary education (except CSD) must also include:**

- **Psyc 241** Introduction to Statistics ................................................................ (4)
- **Psyc 303** Research Methods in Psychology ................................................. (4)

**OPTIONAL EMPHASIS**

Although no student majoring in psychology is required to complete an emphasis, students may choose to do so in order to gain greater background in their areas of interest in the field of psychology. There are five emphases that students may select from: Educational Psychology; Psychology of Human Development; Biological and Physiological Psychology; Social and Cultural Psychology; and Clinical Science. Students are encouraged to contact the department or the department’s website for a description of each emphasis. In order to complete an emphasis, a student must pass at least four of the courses listed. Courses taken in the core curriculum may count toward completion of an emphasis. Students may complete more than one emphasis and courses listed under one emphasis may be counted toward completion of multiple emphases. Students wishing to receive a certificate in one or more emphases must apply with the Psychology Department no later than the deadline for applying to graduate and no earlier than the start of the semester of their intended graduation. Students with declared emphases will receive a certificate from the Psychology Department following their graduation.

**Courses**

**Psychology 111 is the prerequisite for all other Psychology courses.**

111. Introduction to Psychology, 3 credits. A survey of the scientific study of behavior and mental processes, with consideration of the nature and scope of psychology as a science and a profession. F, S

213. Educational Psychology, 3 credits. Human development; perceptual processes; learning; the home, the school and personality; psychology of school subjects; evaluation of pupils. F, S

241. Introduction to Statistics, 4 credits. Prerequisite: Math 103 or 104. Descriptive and inferential statistics as applied to psychological measurement and experimentation. F, S

250. Developmental Psychology, 4 credits. A survey of the psychology of human life span development including intellectual, social, and emotional aspects of the normal individual and emphasizing childhood and adolescent development.

270. Abnormal Psychology, 3 credits. Prerequisites: Psyc 111 and three additional hours of psychology. A survey of the classification, symptoms, and etiology of psychological disorders and behavior pathology. F, S

299. Special Topics in Psychology, 1-3 credits. On Demand.

301. Industrial and Organizational Psychology, 3 credits. Prerequisites: any basic statistics course. Selection, training, motivation, leadership, job satisfaction, human engineering and working environments as applied to business and industry. F

303. Research Methods in Psychology, 4 credits. Prerequisites: Psyc 111 plus 103 or 104, Psyc 241. Methods of gathering knowledge in psychology with special emphasis on the experimental method. F, S

331. Behavior Modification and Therapy, 3 credits. Theory and practice in the application of operant and classical conditioning procedures to humans in applied settings. S

355. Adulthood and Aging, 3 credits. Prerequisite: Psyc 111 plus 3 credits of Psychology. Basic findings and theoretical issues in the study of human aging from biopsychological and socio-psychological perspectives with an emphasis on the individual. F

360. Introduction to Personality, 3 credits. Examination of basic concepts in the field of personality. F, S

361. Research in Social Psychology, 3 credits. Research on individual behavior in its social context: how the individual acts upon the social environment, and interacts with other individuals. (No longer equivalent to Soc 361). S

395. Practical Experiences in Psychology, 1-4 credits, repeatable to 8. Prerequisites: Junior or senior status, completed Psyc 303 with a grade of C or above, minimum GPA of 2.0. A practical work experience associated with the student’s academic study of psychology. Arranged by mutual agreement among student, department, and placement site. S/U grading only. F, S, SS

397. Cooperative Education, 1-4 credits, repeatable to 8. Prerequisites: Junior or Senior status, completed Psyc 303 with a grade of C or above, minimum GPA of 2.0. A practical work experience associated with the student’s academic area of psychology. Arranged by mutual agreement among student, department and employer. Students need to contact the Cooperative Education office. F, S, SS

405. History and Systems of Psychology, 3 credits. Prerequisite: Psyc 303. A consideration of the historical background and development of problem areas in psychology and a survey of contemporary psychological theories. F, S

421. Individual and Group Differences, 3 credits. Prerequisites: Psyc 241 and 250 or consent of instructor. Origins and consequences of psychological differences among individual and groups with special emphasis on sex differences and racial differences. S, S/2

433. Psychology of Learning, 4 credits. Prerequisite: Psyc 303. Principles of animal and human learning, with special emphasis on the acquisition, extinction and retention of learned behavior patterns. Course includes recitation and laboratory. F/2, S/2

434. Motivation and Emotion, 4 credits. Prerequisite: Psyc 303. Survey of theories and experimental work on motivation and emotion. Course includes recitation and laboratory. F/2

435. Physiological Psychology, 4 credits. Prerequisites: Biol 150, 151, Psyc 303, or consent of instructor. Physiological basis of psychological functions. Course includes recitation and laboratory. S/2

436. Perception, 4 credits. Prerequisite: Psyc 303. Perceptual basis of behavior. S/2

437. Psychophysiology, 4 credits. Prerequisites: Psyc 303. Examination of the anatomy and physiology of several psychologic systems, the relationships between behavior and physiology, and the importance of individual differences in physiologic responses. Course includes recitation and laboratory. S/2

439. Cognitive Psychology, 4 credits. Prerequisite: Psyc 303. An examination of the anatomy and psychology of the brain and various aspects of cognition. Course includes recitation and laboratory. F

451. Advanced Developmental Psychology, 3 credits. Prerequisites: Psyc 241 and 303. In depth analysis of topics covering the entire lifespan, from genetic and prenatal influences to death and dying. S, S/2

460. Advanced Social Psychology, 3 credits. Prerequisites: Psyc 303, 361 (or Soc 361). In depth examination of the theoretical and empirical literature in social psychology focusing on attitudes, stereotyping and prejudice, interpersonal relationships, social cognition, personality and the self, and group behavior. F

465. Multicultural Psychology, 3 credits. Prerequisite: Psyc 241. Examination of cross-cultural work in psychology with attention to race, ethnicity, and culture. Spec-
General emphasis is given to research, training, and treatment issues with minority groups, including the American Indian and other cultural groups. F/S.

478. Introduction to Clinical Psychology. 3 credits. Prerequisites: Psy 241, 270 or consent of instructor. A systematic survey of the field of clinical psychology; basic concepts in diagnosis, psychotherapy, research and professional problems. F.

485. Seminar in Psychology. 1-3 credits. Prerequisite: consent of instructor. On Demand.

489. Senior Honors Thesis. 1 to 15 credits; total not to exceed fifteen. Prerequisite: consent of the Department and approval of the Honors Committee. Supervised independent study culminating in a thesis. F, S.

492. Individual Projects in Psychology. 1-4 credits. Repeatable to 8 credits. Prerequisite: consent of instructor. F, S.

493. Tutoring in Psychology. 2 credits. Repeatable to 4 credits. Prerequisite: consent of instructor. S-U grading only. F, S.

494. Readings in Psychology. 1-3 credits. Repeatable to 8 credits. Prerequisite: consent of instructor. F, S.

499. Advanced Special Topics in Psychology. 1-3 credits. Prerequisite: consent of instructor. On Demand.
Recreation and Leisure Services (RLS)
Schroeder (Program Coordinator), Kaiser, and Mahar

The belief that individuals and society benefit from leisure activity and recreation is the driving force behind the mission of the Recreation and Leisure Services Program, which is to promote an enhanced quality of life through recreation, leisure, activity, and sport for the people of North Dakota and beyond. The Recreation and Leisure Services Program works toward this mission through the professional preparation of students for careers in recreation, therapeutic recreation, parks and leisure services field; developing students’ theoretical bases of knowledge and analytical skills; and contributing to society and the profession through the development of a program of research and other scholarly activity, providing leadership and technical assistance to local and regional organizations, and being actively involved in professional organizations on the state, regional, and national levels.

Educational Programs
Housed in the Department of Social Work, the Recreation and Leisure Services Program offers a major which leads to a Bachelor of Science degree in Recreation and Leisure Services and a minor in Recreation and Leisure Services.

College of Education and Human Development
B.S. IN RECREATION AND LEISURE SERVICES

Students may apply for admission to the Recreation and Leisure Services Program at any time following the completion of 24 semester hours. A cumulative GPA of 2.20 or higher and successful completion of Precal 111, Soc 110 and Comm 110 are required for admission. Students interested in admission should consult the Social Work Department.

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. The College of Education and Human Development Requirements (see EHD listing).

III. Recreation and Leisure Service Prerequisites:

Comm 110 ...........Fundamentals of Public Speaking ........................................(3)

Pays 111 ...........Introduction to Psychology ..................................................(3)

Soc 110 ...........Introduction to Sociology ..........................................................(3)

IV. Recreation and Leisure Services Core Requirements:

Mgmt 305 ...........Managerial Concepts .........................................................(3)

RLS 201 ...........Leisure and Society .................................................................(3)

RLS 202 ...........Introduction to the RLS Profession ........................................(1)

RLS 204 ...........Recreational Leadership ..........................................................(3)

RLS 222 ...........Program Implementation in Recreation and Leisure ..................(3)

RLS 223 ...........Program Implementation in Recreation and Leisure (1)..............(3)

RLS 272 ...........Recreation and the Natural Environment ..................................(3)

SWA 333 ...........Research and Statistics in Social Work I .................................(3)

SWA 324 ...........Research and Statistics in Social Work II ................................(3)

RLS 360 ...........Inclusion in Recreation Setting ..................................................(3)

RLS 385 ...........Professional Development .......................................................(2)

RLS 413 ...........Financing Recreation and Leisure Services ..............................(3)

RLS 479 ...........Recreation Areas and Facilities .................................................(3)

RLS 497 ...........Internship in Recreation .............................................................(12)

SWA 257 ...........Human Behavior in the Social Environment ............................(3)

Total Hours .................................................. 165

V. Recreation and Leisure Services Emphasis Area (15 credits)

The emphasis area is developed along with the academic advisor to meet each student’s individual career goals. Some examples of emphasis areas which could be developed are: Recreation Administration, Outdoor Leadership, Therapeutic Recreation, Tourism/Commercial Recreation.

PROFESSIONAL CERTIFICATION

The National Council on Therapeutic Recreation Certification (NCTRC) certifies qualified individuals as Certified Therapeutic Recreation Specialists (CTRS). Although graduation with a B.S. in Recreation and Leisure Services and a therapeutic recreation emphasis does not guarantee CTRS certification, it is intended to qualify the graduate to pass the certification exam. It is recommended that students interested in NCTRC certification become familiar with the requirements for that certification.

The North Dakota Recreation and Park Association, in conjunction with the National Recreational and Park Association, certifies recreation and leisure services professionals as Certified Park and Recreation Professionals (CPRP). The CPRP certification requires graduation with a bachelor’s degree in recreation, parks and leisure, the completion of 2 years of professional experience, and the successful completion of the CPRP exam. Graduation with a B.S. in Recreation and Leisure Services does not guarantee CPRP certification, but it is intended to qualify an individual to pass the exam.

MINOR IN RECREATION AND LEISURE SERVICES

Required for the Recreation and Leisure Services minor:

20 credits, including:

RLS 201 ...........Leisure and Society .................................................................(3)

RLS 222 ...........Program Planning in Recreation and Leisure ...........................(3)

RLS 360 ...........Inclusion in Recreation Setting ..................................................(3)

RLS 385 ...........Professional Development .......................................................(2)

Elect 9 credits of RLS courses as approved by an RLS adviser.

Courses

201. Leisure and Society. 3 credits. Prerequisite: Soc 110 and Psy 111. Orientation to recreation and leisure, including sociological, psychological, historical, philosophical and professional implications and influences of recreation and leisure on society.

202. Introduction to the RLS Profession. 1 credit. Prerequisite: RLS 201. Introduction to the recreation, parks and leisure services profession.

204. Recreation Leadership. 3 credits. Development of understanding of and ability to utilize leadership and group facilitation strategies to enhance individual leisure experiences. F

222. Program Planning in Recreation and Leisure. 3 credits. Prerequisite: RLS 201. Development of program planning skills for recreation programs in various settings, i.e. public; profit with emphasis on activity selection, scheduling and staffing. F

223. Program Implementation in Recreation and Leisure. 1 credit. Prerequisite: RLS 222. Implementation and evaluation of programs planned in RLS 222. S

271. Outdoor Recreation Planning Programs. 2 credits. An overview of the role of outdoor recreation agencies and their programs. A study of the principles and guidelines for outdoor recreation programming. F/Z

272. Recreation and the Natural Environment. 3 credits. An overview of the use of natural environments as formal and informal settings for leisure and recreation involvement and the interrelationship among people, the environment and leisure. F

297. Cooperative Education: Introduction to Recreation. 1-4 credits, repeatable to 8. An experimental/service learning experience through a recreation-oriented job for non-majors. Arranged by mutual agreement among student, department, and employer. Students may count a maximum of 8 credits of RLS 297 and RLS 397 toward the RLS degree.

321. Human Resources for Recreation. 2 credits. Prerequisites: RLS 204, Mgmt 305. The supervision of human resources for the leadership of recreation and leisure services.

359. Introduction to Therapeutic Recreation. 3 credits. Prerequisite: RLS 201. An overview of the nature and scope of therapeutic recreation by examination of the history, philosophy, service delivery systems and issues that confront the profession.

On demand

360. Inclusion in Recreation Settings. 3 credits. Study of individuals with disabling conditions and their leisure-related needs with emphasis on integration strategies and legislation that facilitate community involvement.


370. Principles of Tourism. 3 credits. Overview of tourism including travel behavior, tourism planning and policy, tourism impacts and promotion of tourism.

371. Outdoor Recreation and Resources Management. 3 credits. The principles of managing outdoor recreation sites and visitor systems where the natural environment provides the dominant attraction. Selected parks, resorts, camps, and preserves will serve as example applications of management strategies. On Demand.

385. Professional Development. 2 credits. Prerequisites: RLS 222, 321 and satisfactory completion of RLS program volunteer experience requirement. Independent and group study of professional development and placement for the recreation and leisure services field.

398. Field Experience in Recreation and Leisure Services. 1-8 credits. Prerequisite: consent of instructor and upper division status. Placement of student in a practical setting under university faculty supervision. On Demand.
Rehabilitation and Human Services (RHS)

Blahy, Houston, and Perry (Program Coordinator)

People with disabilities are experiencing greater community integration in our society than ever before. Enhancing the integration and promoting the full acceptance and empowerment of these individuals is central to the mission of the Rehabilitation and Human Services program. This interdisciplinary program prepares students for a wide variety of rehabilitation-related careers in which they will have the opportunity to advance the maximum level of social and economic independence of persons with physical, developmental, learning, and psychiatric disabilities.

The program offers a Bachelor of Science degree in Rehabilitation and Human Services. In addition, a minor in Rehabilitation and Human Services is offered. These programs are administered by the Department of Social Work, which is part of the College of Education and Human Development.

Students may apply for admission to the Rehabilitation and Human Services major at any time after the completion of 45 semester credits (including RHS 250). An overall GPA of 2.5, completion of 40 hours of rehabilitation-related volunteer work, and a written statement of interest in professional rehabilitation practice are also required for admission. Students interested in applying for admission should contact the program coordinator.

College of Education and Human Development

B.S. IN REHABILITATION AND HUMAN SERVICES

Required 125 credits which must include the following:

I. General Education Requirements (see University GER listing).

II. College of Education and Human Development requirements (see EHD listing).

III. Core Curriculum (32 credits):

- RHS 250 - Contemporary Issues in Rehabilitation (3)
- RHS 309 - Medical and Psychosocial Aspects of Disability I (3)
- RHS 310 - Medical and Psychosocial Aspects of Disability II (3)
- RHS 455 - Rehabilitation Process (3)
- RHS 457 - Vocational Development in Rehabilitation (3)
- RHS 465 - Professional Issues in Rehabilitation (2)
- RHS 475 - Testing and Assessment (3)

RHS 491 - Rehabilitation Field Seminar (2)
RHS 497 - Internship in Rehabilitation (10)

IV. Other Required Courses (16 credits):

- SWK 200 - Introduction to Helping Skills (2)
- SWK 256 - Social Welfare (2)
- SWK 257 - Human Behavior in the Social Environment (4)
- PSYC 250 - Developmental Psychology (4)
- SWK 353 - Research and Statistics I (3)
- SWK 334 - Research and Statistics II (3)
- SWK 418 - Social Policy Analysis (2)

V. At Least One Concentration from the Following (10 credits):

1. Mental Health

   - RLS 201 - Leisure and Society (3)
   - RLS 360 - Inclusion in Recreation Settings (3)
   - Psych 270 - Abnormal Psychology (3)
   - Psych 360 - Introduction to Personality (3)
   - SWK 493 - ST: Children's Mental Health (2)
   - T&L 316 - Introduction to the Emotionally Disturbed Child (2)
   - Other courses as approved by Program Coordinator

2. Gerontology

   - SWK 354 - Orientation to Gerontology (2)
   - Plus a minimum of 8 credits from the following:
     - CSD 305 - Aging in the Communication Process (3)
     - RLS 201 - Leisure and Society (3)
     - RLS 360 - Inclusion in Recreation Settings (3)
     - Psych 270 - Abnormal Psychology (3)
     - Psych 360 - Introduction to Personality (3)
     - SWK 493 - ST: Children's Mental Health (2)
     - T&L 316 - Introduction to the Emotionally Disturbed Child (2)
     - Other courses as approved by Program Coordinator

3. Gerontology

   - SWK 354 - Orientation to Gerontology (2)
   - Plus a minimum of 8 credits from the following:
     - CSD 305 - Aging in the Communication Process (3)
     - RLS 201 - Leisure and Society (3)
     - RLS 360 - Inclusion in Recreation Settings (3)
     - Psych 270 - Abnormal Psychology (3)
     - Psych 360 - Introduction to Personality (3)
     - SWK 493 - ST: Children's Mental Health (2)
     - T&L 316 - Introduction to the Emotionally Disturbed Child (2)
     - Other courses as approved by Program Coordinator

4. Developmental Disabilities

   - RSH 375 - Community Living Topics: Developmental Disabilities (3)
   - Plus a minimum of 7 credits from the following:
     - RLS 201 - Leisure and Society (3)
     - RLS 360 - Inclusion in Recreation Settings (3)
     - Psych 270 - Abnormal Psychology (3)
     - Psych 360 - Introduction to Personality (3)
     - SWK 493 - ST: Children's Mental Health (2)
     - T&L 316 - Introduction to the Emotionally Disturbed Child (2)
     - Other courses as approved by Program Coordinator

VI. Cultural Diversity (6 credits from the following):

- Anh 171 - Introduction to Cultural Anthropology (3)
- Anh 379 - Culture Area Studies (3)
- Anh 465 - Culture, Illness and Health (3)
- IS 121 - Introduction to Indian Studies (3)
- IS 151 - White Images of Native Americans (3)
- IS 345 - Contemporary American Indian Issues (3)
- IS 370 - North American Indians (3)
- RELS 101 - Development to Religion (West) (3)
- RELS 102 - Development to Religion (East) (3)
- RELS 116 - Women and Religion (3)
- Soc 280 - Diversity in American Society (3)
- Soc 340 - Sociology of Gender and Sex Roles (3)
- Soc 456 - Social Inequality (3)
- SWK 493 - ST: Religion and Spirituality (2)
- CSD 101 - American Sign Language I (2)
- Other courses as approved by RHS and Program Coordinator

VII. Extra-Disciplinary Requirements (30 credits):

- Economics - Any Course (3)
- Engl 125 - Technical and Business Writing (3)
- History - Any Course (3)
- Literature - Any Course (English Department) (3)
- Mgmt 305 - Managerial Concepts (3)
MINOR IN REHABILITATION AND HUMAN SERVICES
(20 credits)

I. Required Courses (15 credits):
1. RHS 250....Contemporary Issues in Rehabilitation..............(3)
2. RHS 309....Medical and Psychosocial Aspects of Disability I..............(3)
3. RHS 455....Rehabilitation Process.............................................(3)
4. RHS 457....Vocational Development in Rehabilitation..................(3)
5. RHS 475....Testing and Assessment.............................................(3)

II. Elective Courses (5 credits from the following):

- Anst 200....Anatomy for Paramedical Personnel.........................(3-5)
- CSD 343....Language Development.............................................(3)
- CSD 333....Language Disorders........................................................................(3)
- ISBE 431....Career and Vocational Education of Special Needs Students..............(3)
- Nurs 490....Transcultural Health Care Theories, Research and Practice..............(3)
- Psyc 270....Abnormal Psychology....................................................(3)
- RHS 375....Community Living Topics.................................................(3)
- RLS 360....Inclusion in Recreation Settings............................................(3)
- RLS 361....Principles of Therapeutic Recreation.................................(2)
- SWK 111....Child Welfare..............................................................................(3)
- SWK 342....Social Work and the Legal Process........................................(2)
- SWK 491....ST: Children’s Mental Health..................................................(2)
- T&L 315....Education of Exceptional Students...........................................(3)
- T&L 421....Transition to Adult Life.........................................................(2)
- T&L 424....Assistive Technology.................................................................(1)
- CSD 101....American Sign Language I....................................................(2)

Courses

250. Contemporary Issues in Rehabilitation. 3 credits. This course introduces students to the profession of rehabilitation and examines how persons with disabilities are treated in our society. Topics include: community and national rehabilitation agencies; political and social influences on rehabilitation programs; conceptualization of disability, attitude development and change, building accessible and inclusive communities, and transforming the media. Opportunities for involvement with agencies providing rehabilitation services will be provided.

309. Medical and Psychosocial Aspects of Disability I. 3 credits. This course provides a basic medical and psychosocial understanding of physical disability for human service workers. It is the first of a two-course sequence which covers medical terminology, causes, treatment, and prognosis of major disabilities; and the vocational and psychosocial impact of these disabilities.

310. Medical and Psychosocial Aspects of Disability II. 3 credits. This course provides a basic medical and psychosocial understanding of developmental, psychiatric, and learning disabilities for human service workers. It is the second of a two-course sequence which covers medical terminology, causes, treatment, and prognosis of major disabilities; and the vocational and psychosocial impact of these disabilities.

375. Community Living Topics. 3 credits. Repeatable to a maximum of 6 credits. This course provides an introduction to independent living for special populations, such as individuals with physical disabilities, developmental disabilities, or serious emotional disturbances. Topics include community-based programming, the deinstitutionalization movement, legislative issues, and the concepts of integration, inclusion, and normalization.

455. Rehabilitation Process. 3 credits. This course examines the history, philosophy, and ethical standards of the rehabilitation profession. Topics include the following: experiences of people with disabilities throughout history, legislation affecting persons with disabilities, public and private rehabilitation systems, case management principles, role of state rehabilitation counselors, principles of independent living, and community resources utilized in rehabilitation programs.

457. Vocational Development in Rehabilitation. 3 credits. This course examines the relationship between work and disability in American society. Topics include the following: theories of career decision making, work values, employment opportunities and barriers for people with disabilities, sources of occupational information, job accommodations, vocational planning and job development, work adjustment training, affirmative action guidelines, and vocational placement strategies.

475. Testing and Assessment. 3 credits. This course introduces the student to basic principles of testing and assessment that can be used with individuals who have disabilities. Various approaches to evaluation are explored, including assessment interviewing, psychometric testing, work samples, and situational assessment.

491. Rehabilitation Field Seminar. 2 credits. Prerequisite: RHS 465. Corequisite: RHS 497. This seminar is designed to integrate the rehabilitation curriculum content with actual rehabilitation practice while in the internship. This is accomplished through journals, written assignments, presentations, and seminar discussions.

497. Internship in Rehabilitation. 10 credits. Prerequisite: RHS 465. Corequisite: RHS 491. S/U grading only. This course consists of a full-time internship requiring 480 total hours (40 hours weekly) in an approved rehabilitation agency with an approved rehabilitation field instructor. The agency-based practicum, guided by a student’s learning plan, provides students with learning opportunities to develop and to integrate rehabilitation knowledge, values and skills at the beginning level of generalist practice. Learning opportunities emphasize the integration of research, problem solving processes and skills, knowledge of rehabilitation programs and policies, understanding disability issues, use of self, and values and ethics of the rehabilitation profession. Upon completion of the internship, students will have experienced practice with individuals in specific groups, families, organizations and communities. Field instructors in conjunction with department faculty complete midterm and final evaluations of student performance. Applications for Field Instruction are submitted two semesters preceding the beginning of this course.

499. Special Topics. 1-3 credits, repeatable to 12. Prerequisite: consent of instructor. Supervised instruction or research which explores topics related to rehabilitation and human services. F, S, SS

Reserve Officer Training Corps

Reserve Officer Training Corps

AIR FORCE (AFROTC)

UND students may participate in the Air Force Reserve Officer Training Corps program through an agreement between UND, North Dakota State University and the Air Force. The purpose of this program is to enable qualified students (undergraduate and graduate) to become commissioned officers in the United States Air Force. Upon completion of the program and graduation from UND, students are commissioned as second lieutenants in the United States Air Force.

The program is conducted by North Dakota State University faculty on the UND campus. Students interested in participating in the program should contact: Air Force ROTC Detachment 610, 261 Clifford Hall, University of North Dakota, Grand Forks ND 58202, (701) 777-4957/4733.

The program is conducted in two phases — the General Military Course for first year students and sophomores, and the Professional Officer Course for juniors and seniors. Each student must register for the appropriate leadership laboratory course (AS 210 for first year and sophomore or AS 410 for juniors and seniors) during each term. Students must complete a field training course before entry into the Professional Officer Course.

General Military Course (GMC)

The four-year program begins with the General Military Course (AS 111, 112, 211, 212). The GMC covers the mission and structure of the Air Force, examines life in the Air Force, and includes the study of strategy, doctrine, and missions of aerospace power from balloons to the space age. Instruction is provided in Air Force career opportunities, educational benefits, and life and work as an Air Force officer.

Field Training

Air Force ROTC Field Training is offered during the summer months at various Air Force Bases. Students in the four-year program participate in four weeks of field training during the summer after their sophomore year. Students applying for entry into the two-
Social Science

The Social Science related fields concentration offers the student a variety of courses in Anthropology, Economics, Geography, History, Political Science and Sociology. The program is designed to permit the student to achieve a moderate concentration in one field and complementary work in all others. Students wishing to complete a "teaching major" in Social Science should instead follow the BSEd program in Social Studies (see Department of Teaching and Learning listing).

College of Arts and Sciences
T. Rand, Adviser

B.A. WITH MAJOR IN SOCIAL SCIENCE
Required 125 credits (56 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:
I. General Education Requirements (see University GER listing).
II. The Following Curriculum:

60 credits

Select courses in the pattern listed below from Anthropology, Economics, Geography*, History, Political Science, and Sociology. At least 24 credits must be in Upper Level work.
21 credits in one department.
12 credits in another department.
9 credits in each of three of the remaining departments

* For Geography courses carrying Social Science credit, see University GER listing

Social Work (SWK)
Blahy, Bruno, Conway, Haga, Heitkamp, Houston, Kraft, Remboldt, Stevens, Woehle (Chair) and Yanks

The undergraduate social work program is accredited by the Council on Social Work Education (CSWE). Graduates of this program are eligible for regular membership in the National Association of Social Workers and may also be eligible for advanced standing in many graduate schools of social work. The program leads to the Bachelor of Science in Social Work (BSSW) degree.

The social work curriculum builds on the base of the baccalaureate program liberal arts. The principal goal of the social work program is to prepare students for beginning social work practice. A second goal is to prepare students for graduate social work education or other graduate programs in human service related fields.

Students who are interested in majoring in social work should register their intent with the College of Education and Human Development at the beginning of the freshman year, if possible. At that time, students will be assigned an adviser from the Social Work Department to help them make an informed choice about majoring in social work and to assist them with their academic planning.

Minimum technical standards for admission into the social work program are:

The Professional Officer Course (POC)
The Professional Officer Course (AS 321, 322, 441, 442) taken during the student’s junior and senior years, concentrates on four main themes: communication skills, national security forces in contemporary American society, the principles and practices of management and leadership in the U.S. Air Force.

Courses (AS)

110. Air Force ROTC: Fitness. 1 credit. Repeatable. Introduction to various AFROTC team sports. Promotes benefits of being physically fit and maintaining Air Force fitness standards. F/S

111. The Foundations of the United States Air Force I. 1 credit. Corequisite: AS 210 or AS 410. Survey course designed to introduce students to the United States Air Force and provides an overview of the basic characteristics, missions, and organization of the Air Force. F


210. Leadership Laboratory. 1 credit. Repeatable. Introduction to Air Force customs and courtesies, drill and ceremonies, and military commands. S/U grading. F/S

211. The Evolution of USAF Air and Space Power I. 1 credit. Corequisite: AS 210 or AS 410, Leadership Laboratory. Introduction to Air Force heritage and leaders, Quality Air Force concepts, ethics and values, leadership, group leadership problems, and the application of communication skills. F

212. The Evolution of USAF Air and Space Power II. 1 credit. Corequisite: AS 210 or AS 410, Leadership Laboratory. Continuation of AS 211. Includes an introduction to Air Force heritage and leaders, Quality Air Force concepts, ethics and values, leadership, group leadership problems, and the application of communication skills. Prepares cadets for field training. S

321. Air Force Leadership Studies I. 3 credits. Corequisite: AS 321 or AS 410, Leadership Laboratory. Study of leadership from the military perspective emphasizing situational leadership and contemporary issues including change management and professional ethics. Case studies are used to illustrate leadership concepts. Officer professional development topics are discussed. F

410. Leadership Laboratory I. 1 credit. Repeatable. Development of leadership skills in a practical, supervised laboratory. Students must instruct, supervise, and lead junior cadets participating in AS 210, and perform high level management functions within the cadre organization. S/U grading. F/S

441. National Security Affairs and Preparation for Active Duty I. 3 credits. Corequisite: AS 210 or AS 410, Leadership Laboratory. A study of the national security process, regional studies, advanced leadership ethics and Air Force doctrine. Topics include the military as a profession, officership, military justice, civilian control of the military, and current issues. Application of communication skills is included. F

442. National Security Affairs and Preparation for Active Duty II. 3 credits. Corequisite: AS 210 or AS 410, Leadership Laboratory. A continuation of AS 441. Topics include the military as a profession, officership, military justice, civilian control of the military, and current issues. Continued application of communication skills and preparation for a new officer’s first active duty assignment are included. S

The major areas of study in the four-week field training program include junior officer training, aircraft and aircrew indoctrination, survival training, communication, base functions, the Air Force environment, and physical training.

The six-week field training course covers the same areas of study as the four-week program and includes an additional two weeks of academic instruction in general military courses.

LEADERSHIP LABORATORY (AS 210—1 credit, 410—1 credit) Repeatable. Instruction is conducted within the framework of a cadre organization and includes a progression of experiences designed to develop each student’s leadership potential. Leadership laboratory involves a study of Air Force customs and courtesies, drill and ceremonies, career opportunities in the Air Force, and the life and work of an Air Force junior officer. Students develop their leadership potential in a practical and supervised laboratory, which can include field trips to Air Force installations throughout the United States. AS 210 is a corequisite of AS 111, 112, 211 and 212. AS 410 is a corequisite of AS 321, 322, 441, and 442.

The major areas of study in the four-week field training program include junior officer training, aircraft and aircrew indoctrination, survival training, communication, base functions, the Air Force environment, and physical training.

The six-week field training course covers the same areas of study as the four-week program and includes an additional two weeks of academic instruction in general military courses.

LEADERSHIP LABORATORY (AS 210—1 credit, 410—1 credit) Repeatable. Instruction is conducted within the framework of a cadre organization and includes a progression of experiences designed to develop each student’s leadership potential. Leadership laboratory involves a study of Air Force customs and courtesies, drill and ceremonies, career opportunities in the Air Force, and the life and work of an Air Force junior officer. Students develop their leadership potential in a practical and supervised laboratory, which can include field trips to Air Force installations throughout the United States. AS 210 is a corequisite of AS 111, 112, 211 and 212. AS 410 is a corequisite of AS 321, 322, 441, and 442.

Professional Officer Course (POC)
The Professional Officer Course (AS 321, 322, 441, 442) taken during the student’s junior and senior years, concentrates on four main themes: communication skills, national security forces in contemporary American society, the principles and practices of management and leadership in the U.S. Air Force.

Courses (AS)

110. Air Force ROTC: Fitness. 1 credit. Repeatable. Introduction to various AFROTC team sports. Promotes benefits of being physically fit and maintaining Air Force fitness standards. F/S

111. The Foundations of the United States Air Force I. 1 credit. Corequisite: AS 210 or AS 410. Survey course designed to introduce students to the United States Air Force and provides an overview of the basic characteristics, missions, and organization of the Air Force. F


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211. The Evolution of USAF Air and Space Power I. 1 credit. Corequisite: AS 210 or AS 410, Leadership Laboratory. Introduction to Air Force heritage and leaders, Quality Air Force concepts, ethics and values, leadership, group leadership problems, and the application of communication skills. F

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410. Leadership Laboratory I. 1 credit. Repeatable. Development of leadership skills in a practical, supervised laboratory. Students must instruct, supervise, and lead junior cadets participating in AS 210, and perform high level management functions within the cadre organization. S/U grading. F/S

441. National Security Affairs and Preparation for Active Duty I. 3 credits. Corequisite: AS 210 or AS 410, Leadership Laboratory. A study of the national security process, regional studies, advanced leadership ethics and Air Force doctrine. Topics include the military as a profession, officership, military justice, civilian control of the military, and current issues. Application of communication skills is included. F

442. National Security Affairs and Preparation for Active Duty II. 3 credits. Corequisite: AS 210 or AS 410, Leadership Laboratory. A continuation of AS 441. Topics include the military as a profession, officership, military justice, civilian control of the military, and current issues. Continued application of communication skills and preparation for a new officer’s first active duty assignment are included. S
a. ability to communicate in such a manner as to facilitate a helping relationship in the delivery of services.
b. mobility sufficient to perform essential work-related activities.
c. personal resources (psychological, social and intellectual) that facilitate the use of self in a helping manner in a social work setting.

Students are required to make application for admission to the social work program. Additional criteria for admission are as follows:

1. completion of 45 semester hours of coursework;
2. attainment of a cumulative University GPA of 2.40 or better;
3. minimum attainment of a social work core course GPA of 2.50 and a grade of “C” or better in the social work core courses, i.e., SWK 200, Intro to Helping Skills; SWK 255, Social Work in a Modern Society; SWK 256, Social Welfare; SWK 257, Human Behavior in the Social Environment, or their equivalent (as approved by the social work faculty).
4. completion of Biol 111, Concepts of Biology or equivalent, or Biology 150 and 151, General Biology I and II, Pols 115 American Government I, Psy 111 Introduction to Psychology, and Soc 110 Introduction to Sociology.
5. completion and documentation evidence of at least 40 hours volunteer or paid work in a community service agency within two years preceding application for admission. (Examples of acceptable community service agencies are: human service agencies, hospitals, Y Family Centers, social/recreational centers, nursing homes). Volunteer activities must be approved by the student’s academic adviser.
6. social work students must agree to read and abide by the Social Work Code of Ethics and UND Student Code of Conduct.

Admission to the social work program is on a competitive basis and occurs twice each academic year. Admissions are limited by availability of departmental resources and by the number of suitable field practicum placements available to undergraduate social work students. Acceptance into the program is currently based upon the applicant’s grade point average, written statement, personal interview, volunteer experience and other personal qualifications.

Students who have previously been admitted to the social work program, but have not enrolled in a social work base course for six consecutive semesters (excluding summer sessions), must re-apply for admission to the program before enrolling in any social work base course. In accordance with accreditation standards, departmental requirements at the time of readmission shall constitute the student’s required program of study.

Social Work majors must achieve a cumulative University GPA of 2.40. Prior to and after formal admission, a grade of “C” or better is required in all social work courses and a minimum overall social work GPA of 2.50 must be maintained in all social work courses. A student must meet these requirements for retention in the social work program and to move forward into field placement.

Students transferring to the UND Department of Social Work, who have completed social work courses at other institutions, will only receive credit for upper division (300-400 level) practice coursework taken from a CSWE accredited BSSW program. Students who wish to transfer social work credit from courses completed at a previous accredited institution will also need to have course equivalency determined by the UND course instructor and the BSSW Coordinator. Students must complete at least 20 semester hours of core social work courses at UND prior to graduation. The transfer student must also apply for admission to the department before proceeding to the practice courses and/or field experience.

There are special requirements while enrolled in SWK 487: Field Instruction. The student is responsible for travel, housing and food costs in addition to the payment of tuition while in the semester-long placement.

The faculty reserves the right not to place a student in a field instruction agency and to remove a student from SWK 487: Field Instruction if performance is unsatisfactory. Students are encouraged to complete the field practicum experience during the last semester in which they are enrolled prior to graduation.

College of Education and Human Development

B.S. IN SOCIAL WORK

Required 125 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. College of Education and Human Development (see College listing).

III. The following Curriculum.

A. Base (41 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWK 200</td>
<td>Intro to Helping Skills</td>
<td>(2)</td>
</tr>
<tr>
<td>SWK 255</td>
<td>Social Work in a Modern Society</td>
<td>(3)</td>
</tr>
<tr>
<td>SWK 256</td>
<td>Social Welfare</td>
<td>(2)</td>
</tr>
<tr>
<td>SWK 257</td>
<td>Human Behavior in the Social Environment</td>
<td>(4)</td>
</tr>
<tr>
<td>SWK 322</td>
<td>Foundation for Generalist Social Work Practice</td>
<td>(2)</td>
</tr>
<tr>
<td>SWK 333</td>
<td>Research and Statistics I</td>
<td>(3)</td>
</tr>
<tr>
<td>SWK 334</td>
<td>Research and Statistics II</td>
<td>(3)</td>
</tr>
<tr>
<td>SWK 418</td>
<td>Social Policy Analysis</td>
<td>(2)</td>
</tr>
<tr>
<td>SWK 450</td>
<td>Social Work Practice with Micro Systems</td>
<td>(3)</td>
</tr>
<tr>
<td>SWK 454</td>
<td>Social Work Practice with Large Systems</td>
<td>(3)</td>
</tr>
<tr>
<td>SWK 460</td>
<td>Senior Seminar</td>
<td>(2)</td>
</tr>
<tr>
<td>SWK 487</td>
<td>Field Instruction</td>
<td>(4-10)</td>
</tr>
<tr>
<td>SWK 488</td>
<td>Field Instruction Seminar</td>
<td>(1-2)</td>
</tr>
</tbody>
</table>

B. Extra-Departmental Requirements (43)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 111</td>
<td>Concepts of Biology</td>
<td>(3)</td>
</tr>
<tr>
<td>or Biol 150</td>
<td>General Biology I</td>
<td>(3)</td>
</tr>
<tr>
<td>and 151</td>
<td>General Biology II</td>
<td>(3)</td>
</tr>
<tr>
<td>Comm 110</td>
<td>Fundamentals of Public Speaking</td>
<td>(3)</td>
</tr>
<tr>
<td>Economics</td>
<td>History (three credit hour course only)</td>
<td>(3)</td>
</tr>
<tr>
<td>Literature</td>
<td>(English Department)</td>
<td>(4)</td>
</tr>
<tr>
<td>Pols 115</td>
<td>American Government I</td>
<td>(3)</td>
</tr>
<tr>
<td>Psychology</td>
<td>(upper division)</td>
<td>(6)</td>
</tr>
</tbody>
</table>

C. Cultural Diversity (6)*

*Selected from the following list, or as approved by advisor:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 265</td>
<td>Native American Literature</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 355</td>
<td>Women Writers &amp; Readers</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 365</td>
<td>Black American Writers</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 121</td>
<td>Intro to Indian Studies(3)</td>
<td></td>
</tr>
<tr>
<td>IS 201</td>
<td>History of the Sioux(3)</td>
<td></td>
</tr>
<tr>
<td>IS 203</td>
<td>History of the Chippewa</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 307</td>
<td>History of Three Affiliated Tribes</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 330</td>
<td>Contemp Plains Indian Culture</td>
<td>(3)</td>
</tr>
<tr>
<td>IS 345</td>
<td>Contemp Amer Indian Issues</td>
<td>(3)</td>
</tr>
<tr>
<td>RHS 250</td>
<td>Contemp Issues in Rehab</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 456</td>
<td>Social Inequality</td>
<td>(3)</td>
</tr>
</tbody>
</table>

A total of 45 hours is required and a given course may not be used to satisfy more than one requirement within this section.

Courses used to fulfill the approved minor requirements may also be used to meet the above requirements whenever appropriate and applicable.

MINORS

Students may also choose a minor outside the College of Education and Human Development and the Department of Social Work. The student should consult with the respective College and Department for course requirements for their chosen minor.
GERONTOLOGY MINOR
Required: 20 credits including:

1) The following eleven hours:
   Soc 418......Physical Changes of Aging.............(3)
   Psy 355......Adulthood and Aging..................(3)
   SW 256......Orientation to Gerontology..............(3)
   Soc 352......Aging..................................(3)

2) Nine hours from the following:
   CSD 365......Aging and Communication Processes ... (3)
   Phil 101......Introduction to Philosophy............(3)
   Phil 215......Contemporary Moral Issues.............(3)
   Phil 310......Ethics........................................(3)
   IS 121......Introduction to Indian Studies.......... (3)
   IS 499......Introduction to Sociology.................(3)
   Nutr 240......Fundamentals of Nutrition...............(3)
   Psy 421......Individual and Group Differences...... (3)
   RLS 360......Inclusion in Recreational Setting...... (3)
   Soc 355......Sociology of Death and Dying........... (3)
   Soc 354......Medical Sociology.......................(3)
   SW 256......Social Welfare............................(2)
   SW 257......Human Behavior in the Social Environment(4)

With current approval of the student adviser and the minor coordinator up to three credit hours of departmental tutorial readings, special topics and/or research studies may be included.

CHEMICAL USE/ABUSE AWARENESS MINOR
Required: 20 credits including:

1) The following:
   * PPT 410......Drugs Subject to Abuse.................(2)
   * Soc 355......Drugs and Society......................(3)
   * SW 410......Drugs: Addiction Dynamics............(2)

2) Thirteen from the following:
   * CJS 420......Dynamics of Addiction...............(2)
   * IS 345......Contemporary American Indian Issues.(3)
   * PPT 499......Readings in Pharm & Toxicology(1-4)
   * Psy 430......Introduction to Forensic Psychology(2)
   * Psy 270......Abnormal Psychology................... (3)
   * Soc 115......Social Problems........................ (3)
   * Soc 335......The Family................................ (3)
   * RIS 307......Medical & Psychosocial Aspects of Disability (3)
   * T&K 350......Development & Education of the Adolescent... (3)
   * Comm 301......Psychology of Communication.........(3)
   * Course required for licensing in addiction counseling.
   ** Student must be junior status or graduate level to enroll in this course.

SOCIAL WELFARE MINOR
20 semester credits:

This minor is for non-social work majors. Note: A minor in Social Welfare is not accepted by the Council on Social Work Education as adequate preparation for entry level social work practice; neither does a minor in social welfare qualify students to take state licensure examinations. This minor is offered solely for students desiring knowledge in the areas of social services.

Eleven hours from these required courses:
   SW 255......Social Work in a Modern Society.........(3)
   SW 256......Social Welfare............................(2)
   SW 257......Human Behavior in the Social Environment(4)
   SW 394......Social Policy................................ (2)

Note: These courses have the following prerequisites:
   Soc 110 (3), Psy 111 (3), Pols 115 (3), Biol 111 (3), and SW 333 (3).

Nine hours from the following:
   CJS 201......Introduction to Criminal Justice.......(3)
   RLS 201......Leisure & Society.......................(3)
   RJS 250......Contemporary Issues in Rehabilitation(3)
   RJS 375......Community Living Topics.............. (3)
   SW 311......Child Welfare..............................(3)
   SW 342......Social Work and the Legal Process......(2)
   SW 410......Drugs: Addiction Dynamics............(2)
   SW 483......Special Topics: Family Violence........ (2)
   SW 493......Special Topics: Mental Health.......... (2)

OTHER MINORS: Additional minors that the social work major should consider are Communication, Criminal Justice Studies, Indian Studies, Psychology, Rehabilitation, Sociology, or Spanish.

Addiction Counselor Training Program

The Department of Social Work is designated as an Addiction Counselor Training Program by the North Dakota Board of Addiction Counseling Examiners. Students who successfully complete the course of study, the clinical training requirements and the licensure examination are eligible for licensing as addiction counselors in the State of North Dakota.

Students are admitted to this training on two levels. The first level includes social work majors who also complete the minor in Chemical Use/Abuse Awareness (required courses for licensing in addiction counseling, or their equivalent) and the nine-month practicum in a certified addiction facility. Students must meet all requirements for a social work major in addition to the minor requirements and the addiction practicum requirement. This generally involves a five-year program of study.

The second level relates to graduate students in Counseling who must meet the required graduate program of study, the required addiction courses, and the nine-month practicum. For more complete details, please contact the Department of Social Work or the Department of Counseling.

Courses

200. Introduction to Helping Skills. 2 credits. This course provides the basic knowledge and skills associated with the helping process, including interview skills. A special focus will be on the problem solving process and interaction skills used in direct service activities with individuals. F, S.

255. Social Work in a Modern Society. 3 credits. This course is designed to provide an introduction to the profession of social work. Course content concentrates on the development of the profession; the assumptions which underlie social work goals, functions, and methods; the basic professional values guiding practice; and description of practice methods. The course also provides an opportunity for the student to learn about the settings and roles in which social workers practice the profession. F, S.

256. Social Welfare. 2 credits. Prerequisites: Pols 115 or consent of instructor. This course provides an introduction to the development of social welfare, its historic landmarks, and the values and ideologies that influence its formulation. Information about inequality, and the major social welfare programs that benefit the disadvantaged is included. The course will also provide a basic analytic model to evaluate social welfare policies. F, S.

257. Human Behavior in the Social Environment. 4 credits. Prerequisites: Psy 111, Soc 110, Biol 111 or 150 and Biol 151. This foundation course uses ecological/social systems theory as the overall conceptual framework. Bio-psycho-social-cultural aspects of human development are emphasized along with a recognition of the reciprocal interactions and transactions of multiple systems that influence human development throughout the life span. A paradigms framework is used for presenting human behavior theory and diversity. F, S.

311. Child Welfare. 3 credits. This course provides a historical perspective regarding the social, legal and economic status of childhood; study of the special status of childhood in a modern society; and the provisions used to address the needs of children and their families. F. S.

322. Foundation for Generalist Social Work Practice. 2 credits. Prerequisite: Formal admission to the BSW Program. This course provides the students with an overview of the knowledge and values for generalist social work practice. A focus of the course is on the problem solving process within the context of an ecological systems perspective. F, S.

333. Research and Statistics I. 3 credits. Prerequisite: Formal admission to the BSSW, Rehabilitation and Human Services, or Recreation and Leisure Services Programs or consent of the instructor. This course provides an orientation to current research practices in human services. Emphasis is placed on the scientific and systematic evaluation of service delivery and personal professional practice. An introduction to statistical analysis in human services is provided. F, S.

334. Research and Statistics II. 3 credits. Prerequisite: SW 333. This course provides a further development of current research practices in human services. Topics such as single subject research, experimental designs, survey research, and other qualitative and quantitative research designs are presented. Students are introduced to inferential statistical techniques as utilized in human services practice. In addition, students will learn how to obtain solutions to statistical problems through the use of computer programs. F, S.

342. Social Work and the Legal Process. 2 credits. This course provides an introduction to the human service delivery system and its interface with the legal system. F.

346. Orientation to Gerontology. 2 credits. A general introduction to gerontology including the study of the aging process, the relationship between the theoretical and practice aspects of aging, and the interdisciplinary nature of practice. F.

397. Cooperative Education. 1-6 credits. Prerequisite: SW 322 or consent of instructor. This course offers students individually supervised practical experiences in a human service agency. Students will be expected to integrate social work theory with practice. Students need to contact the Cooperative Education Office. F, S, SS.

416. Drugs: Addiction Dynamics. 2 credits. Prerequisite: Junior standing. This course is an introduction to the dynamics of drug addiction and related drug abuse issues. Special emphasis will be placed on alcohol as the most frequently used and abused drug. F.
Sociology

(Csoc)

Crawford, Driscoll, Huffman, Larson, Ludtke, Moen, Staples (Chair), Stofferahn, Tiemann, and White

This department offers a major and minor in sociology. In addition, there is a graduate program leading to the M.A. The undergraduate programs in sociology are outlined below.

Graduate seminars, reading courses, and courses with eight or more credits may be repeated for credit at the discretion of the department. Some sociology background is usually necessary for upper level courses even when no specific prerequisite is listed.

College of Arts and Sciences

B.A. WITH A MAJOR IN SOCIOLOGY

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. The following Curriculum:

33 credits, including:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soc 301</td>
<td>Basic Sociology Theory</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 325</td>
<td>Sociological Research Methods</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 326</td>
<td>Sociological Statistics</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 361</td>
<td>Social Psychology</td>
<td>(4)</td>
</tr>
</tbody>
</table>

9 credits from:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soc 306</td>
<td>Social Change</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 335</td>
<td>The Family</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 431</td>
<td>Organizations and Behavior</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 435</td>
<td>Racial and Ethnic Relations</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 436</td>
<td>Social Inequality</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 437</td>
<td>Population</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 450</td>
<td>Deviant Behavior</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Electives in Sociology (11)

A concentration in a single supplementary field other than sociology is also required of all sociology majors. This concentration may be met in two ways: (1) a language proficiency of level IV in a modern foreign language, or (2) 20 credits (at least nine of which must be numbered 300 or above) in any single subject matter taught at this University.

MINOR IN SOCIOLOGY

Required 22 credits, including:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soc 301</td>
<td>Basic Sociological Theory</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 325</td>
<td>Sociological Research Methods</td>
<td>(3)</td>
</tr>
</tbody>
</table>

At least nine of the other credits must be taken in courses numbered 300 and above.

Courses

110. Introduction to Sociology, 3 credits. An introductory analysis of the nature of society, the interrelationships of its component groups and the processes whereby society persists and changes. Interpretation of human behavior from the standpoint of the group. Students wishing to earn credit from Soc 110 by means of independent study should obtain information from the University Counseling Center on the CLEP examinations administered there. F, S

115. Social Problems, 3 credits. A sociological analysis of major social problems in America. F

250. Diversity in American Society, 3 credits. Prerequisite: Soc 110. An introductory survey of the racial, ethnic, and cultural mosaic of American society. Basic theories of intergroup relations, prejudice and discrimination are covered. F, S

252. Criminology, 3 credits. The extent and character of crime in the United States. A critical examination of the meaning and attempted explanation of crime and juvenile delinquency, with an analysis of the social processes leading to criminal behavior. F, S

253. Juvenile Delinquency, 3 credits. The nature, extent, causes and treatment of delinquency. Delinquency prevention programs are explored. F

301. Basic Sociological Theory, 3 credits. Prerequisite: Soc 110. A survey of the main trends in the history of sociological thought. Basic concepts and frames of reference central to sociological theory and analysis are emphasized. F, S

306. Social Change, 3 credits. Theoretical models of socio-cultural change and stability; examination of changes occurring in American institutions and international relations; technology and social change; procedures and problems of planned change. F

309. Selected Topics, 1-4 credits. Prerequisites to be determined when offered. Selected topics in sociology taught at the junior level. On Demand

323. Sociological Research Methods, 3 credits. Prerequisite: Soc 301 or CJ 301. A general consideration of methods involved in survey research in the social sciences. F, S

326. Sociological Statistics, 3 credits. It is assumed that students are able to perform basic mathematical and algebraic operations. This course introduces the student to calculation and application of basic statistical techniques employed by sociologists. F, S

331. Rural Sociology, 3 credits. Prerequisite: consent of instructor. A survey of sociological principles as they relate to rural society with emphasis on rural change and rural development. On Demand

335. The Family, 3 credits. Structure and function of the family, comparative family systems; sociology of family life stages (such as courtship, marriage, parenthood, old age), contemporary trends and problems of the family. F, S

340. Sociology of Gender and Sex Roles, 3 credits. Prerequisite: Soc 110 or Soc 115 or Soc 230. The implications of gender for social behavior in cross-cultural and historical perspective as well as in contemporary Western society. F

351. Corrections, 3 credits. Prerequisites: Soc 252 or CJ 201. A course describing the correctional system as a part of the criminal justice system. A survey and discussion of topics dealing with offender behavior, institutional programs and community response to ex-offenders. F

352. Aging, 3 credits. Socialization theory and its implication for the aging process. F

354. Medical Sociology, 3 credits. Prerequisite: Soc 110 or 115. Sociological analysis of health care definitions and roles, and the organization, availability and control of health care. F

355. Drugs and Society, 3 credits. Social factors affecting use and control of self-administered psychoactive drugs, including alcohol, cigarettes, marijuana and more

illicit substances. Topics include social definitions, causes, controls and consequences of drug problems. S

361. Social Psychology. 4 credits. Prerequisite: Soc 110. The study of individual behavior in its social context: how the individual acts upon the social environment, is acted upon by the environment, and interacts with other individuals. F

397. Cooperative Education. 1-6 credits repeatable to 12. A practical work experience with an employer closely associated with student's academic area. Prerequisite: 6 hours of Soc or consent of instructor. F, S, SS

407. Political Sociology. 3 credits. Sociological analysis of political and para-political groups; voting behavior; political socialization process; power elites, societies and systems of government, power structures. On Demand.

409. Selected Topics in Sociology. 1-4 credits. Topics in sociology taught at the senior level. On demand.

431. Organizations and Behavior. 3 credits. Prerequisite: 6 hours of Soc or consent of instructor. A look at the different ways in which organizations can be conceptualized and studied. The relationships between organizational structure and individual behavior are examined. The study of the effects of environments, including other organizations, on organizational goals. The kinds of organizations studied include industrial, medical, educational and other types. F, S

435. Racial and Ethnic Relations. 3 credits. Prerequisite: Soc 301 or CJS 301 and Soc 200. A survey of major USA racial and ethnic groups, the histories of their social encounters, and the theoretical perspectives associated with their experiences. On demand.

436. Social Inequality. 3 credits. Prerequisite: 6 hours of Soc or consent of instructor. An examination of various forms and modes of portraying human inequality. An investigation of the role of inequality in human affairs, its measurement and significance. On Demand.

437. Population. 3 credits. Prerequisite: 6 hours of Soc or consent of instructor. A basic consideration of formal and social demography. The determinants and consequences of population change. On Demand.

450. Deviant Behavior. 3 credits. Prerequisite: 6 hours of Sociology coursework or consent of instructor. This course examines the nature, types and societal reactions to deviant behavior, special emphasis on the process of social typing, regulation of deviance, deviant subcultures, and identities. S

489. Senior Honors Thesis. 1-15 credits, total not to exceed fifteen. Prerequisite: Consent of the Department and approval of the Honors Committee. Supervised independent study culminating in a thesis. F, S

492. Practicum in Sociology. 3 credits. Prerequisites: Soc 301, 323, 326 and at least Junior status. Students enrolled in this practicum will be assigned to work on research under the direction of one or more faculty. The practicum is designed to provide directed research experience for those enrolled. Repeatable for a maximum of 6 credits. F, S

494. Readings in Sociology. 1-5 credits. Prerequisite: Consent of instructor. Design for students who want instruction in subjects not covered adequately in usual course offerings. Specific arrangements must be made with the instructor prior to registration. F, S

Courses

200. Introduction to Space Studies. 3 credits. An introduction to a range of topics in space studies including: a brief view of the history of national and international activities, an examination of the fundamentals of space exploration, the history of manned activity in space, a review of some current problems and issues in the space arena, and a projection of the future course of space activities in the coming decades.

405. Advanced Space Mission Design. 3 credits. A team design project to develop the requirements for a space mission. The specific mission will vary from time to time. Design teams will work on selected portions of the mission. Accompanying lectures will provide background material.

410. Life Support Systems. 3 credits. Prerequisite: SpSt 200. A review of the physiological effects of living in space including a discussion of current and near-term life support systems equipment for the provision of oxygen, water, food, and radiation protection. In addition, a review will be made of the issues associated with the development of fully closed ecological life-support systems that will be essential to the long-term development of space.

420. Space Science and Exploration. 3 credits. Prerequisite: SpSt 200. Revolutionary advances that have occurred in astronomy, the earth sciences and planetary science as a result of our entry into space. This course surveys the manned and robotic space missions which have gathered data for this new view of the Universe. The course introduces current concepts in cosmological theory as well as an overview of planetary evolution, solar system dynamical history and physical characteristics of the planet.

425. Observational Astronomy. 3 credits. Prerequisites: SpSt 420 or SpSt 520 or Phys 110. This course will provide an overview of observational astronomy with particular emphasis on planetary astronomy. Students will learn to use the departmental observatory (near Grand Forks AFB), the 18” telescope there, and digital imaging with a CCD camera. Each student will set up the telescope and camera, acquire a target, record the image data, and process it in the laboratory. On Demand.

430. Earth System Science. 3 credits. Prerequisite: SpSt 200. This course begins with a review of the physical sciences of geology, meteorology and oceanography to examine the coupled interactions between the land, atmosphere and oceans. Particular emphasis is placed on remote sensing techniques for global monitoring of biogeochemical processes. The role of human activities on Earth processes and the consequences of global environmental changes are discussed. The growing use of space-based data sets and the implications of Earth Observation system technologies, including research goals and hardware requirements, are examined.

435. Global Change. 3 credits. Prerequisite: SpSt 200 (undergrad) or SpSt 501 (grad). Investigation of environmental changes, often occurring locally, which contribute to large scale global transformations. Some of these changes are natural, others are a consequence of human activity. Topics include: climate impacts, population growth, volcanic eruptions, deforestation, biodiversity, water management, global warming, ozone and sustainable societies.

440. Commercialization of Space. 3 credits. Prerequisite: SpSt 200. A study of the current state of commercial space activities, with analysis of the possibilities and the barriers. Key areas include launch services, satellite communications, remote sensing, microgravity materials processing, and interaction with the government. Global competition against subsidized or government-sponsored entities is examined.

450. Soviet/Russian Space Program. 3 credits. Prerequisite: SpSt 200 (undergrad) or SpSt 501 (grad). From the launch of the world’s first satellite to the present space station, the Soviet Union and Russia have dominated the world’s space stage. A study of the Soviet/Russian Space Program determines why this country has been successful in its space exploration despite economic and cultural chaos. This course presents the development of the Russian Space Program from its earliest roots to its plans for collaboration with the United States on an International Space Station.

453. History of the Space Age. 3 credits. This course introduces students to the history of human endeavors in space. These include the development of rocketry, the influence of amateur societies and science fiction, the military development of ballistic missiles, and human and robotic spaceflight.

460. Life in the Universe. 3 credits. This course examines the evolution of the universe from its origin to the present: cosmological evolution, chemical evolution, planetary evolution, biological evolution, and cultural evolution. The possibility of life in the universe elsewhere than Earth is considered. Human changes to the Earth are placed within this context.

470. Special Topics in Space Studies. 1-3 credits. Prerequisite: consent of instructor. Lecture, discussion and readings on specific topics not covered in other courses. May be repeated for credit if topic is different up to a total of 6 credits. Topics have included: Global Change; Life in the Universe; Asteroids, Comets and Meteors; Planet Venus; and Manned Exploration of Moon and Mars. On Demand.

480. Reading in Space Studies. 1-3 credits. Prerequisite: consent of instructor. Directed student readings, designed to develop advanced knowledge in a specific area. A written report is required. May be repeated for a total of six credits.

491. Independent Study. 2 credits. Prerequisite: Senior standing and 15 hours of Space Studies. An independent study project culminating in a paper on an approved topic in Space Studies. Requires regular meetings with the student’s assigned advisor.

Space Studies (SpSt)
de Silva (Chair), Andres, Bieri, Gaffey, Hardersen, Johnson, McLaughlin and Sadeh

A minor in Space Studies is available to introduce students to the complexities of research, development, and operation of a wide array of space ventures. The multi-disciplinary nature of space activity immediately becomes evident, allowing the student to correlate the space experience with areas in a major field of study. Political, legal, and scientific aspects are dealt with extensively, and key technologies are introduced.

John D. Odegard School of Aerospace Sciences

MINOR IN SPACE STUDIES

Required 20 credits, including:

SpSt 200...Introduction to Space Studies ..................(3)
SpSt 491......Independent Study ...........................(2)
And 15 credits from:
SpSt 405......Advanced Space Mission Design ........(3)
SpSt 410......Life Support Systems ..........................(3)
SpSt 420......Space Science & Exploration ..............(3)
SpSt 425......Observational Astronomy ....................(3)
SpSt 430......Earth System Science .........................(3)
SpSt 435......Global Change .................................(3)
SpSt 440......Commercialization of Space .....................(3)
SpSt 450......Soviet/Russian Space Program ...............(3)
SpSt 451......History of the Space Age ........................(3)
SpSt 460......Life in the Universe ..................................(3)
SpSt 470......Special Topics in Space Studies ...............(3)
SpSt 480......Readings in Space Studies .......................(3)
Teaching and Learning (T&L)

Barrentine (Chair), Bock, Chalmers, Combs, Greves, Guy, Hanley, Helgeson, Holdman, Hurlburt, Ingwaison, LeDosquet, Olsen, Olson, Ross, Shaaffer, Smart, Tepper, Uhlenberg, Walker, Yearwood, and Zidon

Licensing requirements for teachers are impacted by changes at the federal and state level. The following program descriptions are subject to change as new rules and regulations are implemented. It is imperative that all prospective and admitted students to teacher education maintain close and regular contact with their faculty advisors in order to ensure efficient progress toward their degrees.

The University of North Dakota has offered teacher education programs since its founding in 1883. The Department of Teaching and Learning is a comprehensive, accredited, undergraduate and graduate department of education. It supports a broad view of education and seeks to serve preservice and inservice teachers and other education personnel with intensive, intellectually challenging, integrated study.

The Department strives to model the kind of educational environment it is promoting in early childhood settings, elementary schools, middle schools and secondary schools. Students are encouraged to assume initiative and independence in their learning while developing personal and professional commitments and competence. To help meet this expectation, programs in the Department provide for personalized learning. The Department is particularly committed to active community participation in the formation of goals and policy at all levels of education, to Native American communities in their efforts to improve education, and to classroom teachers committed to continue their personal and professional learning.

Teacher education programs at the University of North Dakota are approved by the State Department of Education and the State Board of Higher Education and accepted by the National Council for the Accreditation of Teacher Education (NCATE) and the Higher Education Act reporting procedures. The University is accredited by the North Central Association.

Degree Programs

The Department offers degree programs at the undergraduate level in the preparation of early childhood, elementary, middle and secondary school teachers. Students studying elementary education are also able to pursue specialized study resulting in a combined major in visual arts, early childhood education, physical education, middle level, or mathematics. At the secondary level students must, in addition to their professional coursework, concentrate in an area typically taught at the secondary school. At the present time, the following areas have been approved:

- Biology
- Business Education
- Chemistry
- English
- Fisheries and Wildlife Biology
- French
- Geography/Earth Science
- German
- Industrial Technology
- Marketing Education
- Mathematics
- Physics
- Science
- Social Studies
- Speech/Communication
- Visual Arts

The appropriate sequences of courses and experiences for these majors are outlined under the specific departments offering the majors. Kindergarten through grade 12 majors are also available in music and physical education.

See the College of Education and Human Development listing for information regarding admission to teacher education, graduation and teacher licensure requirements, and other requirements of teacher education students.

B.S. ED. WITH MAJOR IN EARLY CHILDHOOD EDUCATION

Required 125 credits (36 of which must be numbered 300 or above, and 60 which must be from a 4-year institution). Please see an Early Childhood academic advisor for the most accurate program planning.

I. General University Graduation Requirements (see University GER listing).

II. EHD General Graduation Requirements (see EHD listing).

III. The following Early Childhood Education curriculum:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>T&amp;L 252</td>
<td>Child Development</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 310</td>
<td>Introduction to Early Childhood Education</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 486</td>
<td>Field Experience in Early Childhood Education</td>
<td>1</td>
</tr>
<tr>
<td>T&amp;L 311</td>
<td>Observing and Assessing Child</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 313</td>
<td>Language Development &amp; Emerging Literacy</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 314</td>
<td>Social &amp; Emotional Development &amp; Guidance of Children</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 328</td>
<td>Survey of Children’s Literature</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 335</td>
<td>Understanding Readers &amp; Writers</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 355</td>
<td>Education of the Exceptional Student</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 510</td>
<td>Early Intervention for Children with Special Needs</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 433</td>
<td>Multicultural Education</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 411</td>
<td>Primary Reading &amp; Language Arts</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 435</td>
<td>Home-School Relations</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 443</td>
<td>Math for Primary Grades</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 451</td>
<td>Methods &amp; Materials: Pre-Kindergarten</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 453</td>
<td>Methods &amp; Materials: Kindergarten</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 454</td>
<td>Organization &amp; Leadership in Early Childhood Education</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 455</td>
<td>Comparative Approaches to the Education of Children</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 456</td>
<td>Pre-Kindergarten Seminar</td>
<td>1</td>
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<tr>
<td>T&amp;L 457</td>
<td>Student Teaching: Pre-kindergarten</td>
<td>9</td>
</tr>
<tr>
<td>T&amp;L 458</td>
<td>Senior Seminar</td>
<td>1</td>
</tr>
</tbody>
</table>

In addition to the above required courses, students will choose 15 credits of elective courses, selected in consultation with their advisor, making the total credits for the major 81.

MINOR IN EARLY CHILDHOOD EDUCATION

21 credits including:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&amp;L 310</td>
<td>Introduction to Early Childhood Education</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 311</td>
<td>Observation and Description of Children</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 313</td>
<td>Language Development and Emerging Literacy</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 314</td>
<td>Social &amp; Emotional Development &amp; Guidance of Children</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 433</td>
<td>Multicultural Education</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 411</td>
<td>Primary Reading &amp; Language Arts</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 435</td>
<td>Home-School Relations</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 443</td>
<td>Math for Primary Grades</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 451</td>
<td>Methods &amp; Materials: Pre-K</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 453</td>
<td>Methods &amp; Materials: Kindergarten</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 456</td>
<td>Field Experience: ECE</td>
<td>1</td>
</tr>
</tbody>
</table>

B.S. ED. WITH MAJOR IN ELEMENTARY EDUCATION

Due to changes in licensure, new requirements will take effect Fall 2004. Required 125 credits (36 of which must be numbered 300 or above, and 60 which must be from a 4-year institution) including:

I. General University Graduation Requirements (see University GER listing).

II. General Education Requirements.

- Communication — 9 credits (English 110, 120, or 125)
- Social Sciences — 9 credits
- Arts and Humanities — 15 credits

- From 3 departments including Psychology, English, History, or Humanities I and II, including courses from at least two departments, 3 credits of studio visual
IV. Introductory Courses:

T&L 432..............Classroom Management..................................................(2)
T&L 412..............Intermediate Language Arts.............................................(2)
T&L 411..............Primary Reading and Language Arts...............................(2)
T&L 488..............Senior Seminar.................................................................(1)

V. Professional Education

TEAM.
T&L 410..............Reading and Writing in the Elementary School (TEAM).........(3)
T&L 430..............Social Studies in the Elementary School (TEAM)...............(3)
T&L 440..............Math in the Elementary School (TEAM)............................(3)
T&L 470..............Science in the Elementary School (TEAM)........................(3)
T&L 486..............Field Experience...............................................................(2)

VI. Additional Required Courses:
One of the following three courses:

PEXS 310..............First Aid and CPR .........................................................(2)
PEXS 403..............School Health Education
( Early Ed. Combined majors may substitute ) ...........................................(2)

One of the following options:

T&L 411..............Primary Reading and Language Arts.(2)
T&L 412..............Intermediate Language Arts……………………………………(2)
T&L 430/431..............Assessing and Correcting Reading Difficulties (2)Corrective Reading Practicum(2)
T&L 415..............Reading and Writing Development of Bilingual
Second Language Learners…………………………………………………………(2)
T&L 432..............Classroom Management………………………………………………(3)
T&L 433..............Multicultural Education (TEAM prerequisite)………………..(3)
T&L 487..............Student Teaching………………………………………………………….(3)
T&L 488..............Senior Seminar……………….(1)

BILINGUAL EDUCATION/ENGLISH AS A SECOND
LANGUAGE ENDORSEMENT

Students who complete the courses listed below will be eligible for endorsement in Bilingual Education/English as a Second Language. Students must be certified to teach in Elementary, Middle Level or Secondary classrooms.

T&L 313..............Language Development and Emerging Literacy………………. (3)
T&L 415..............Reading & Writing Development of Bilingual & ESL…………………(3)
T&L 432..............Classroom Management………………………………………………(3)
T&L 486..............Field Experience in Early Childhood Education…………………..(3)

B.S.E.D. WITH COMBINED MAJOR IN ELEMENTARY
EDUCATION AND EARLY CHILDHOOD

Required 125 credits (16 of which must be numbered 300 or above and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. EHD General Graduation Requirements (see EHD listing).

III. Elementary Education Curriculum as listed above.

IV. The following Early Childhood Education Curriculum:

T&L 310..............Introduction to Early Childhood Education…………………..(3)
T&L 311..............Observing and Assessing Children……………………………………(3)
T&L 313..............Language Development and Emerging Literacy………………..(3)
T&L 314..............Social and Emotional Development and Guidance of Children…………………..(3)
T&L 435..............Home School Relations………………………………………………(3)
T&L 451..............Methods and Materials: Pre-Kindergarten……………………………………(3)
T&L 452..............Field Experience in Early Childhood Education…………………..(1)
T&L 487..............Student Teaching: Pre-Kindergarten……………………………………(3)

One elective course which deals with communication with adults, to be selected with advisor approval.

Total credits 37-39.

Kindergarten Endorsement

Undergraduate students who wish a Kindergarten Endorsement but do not wish to complete the combined major in elementary and early childhood education must take the following courses as part of 17 hours of required kindergarten coursework. In addition, they are required to student teach in a kindergarten classroom.
B.S. ED. WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND MATHEMATICS

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. EHD General Graduation Requirements (see EHD listing).

III. Elementary Education Curriculum as listed above.

IV. The Following Mathematics Curriculum:

Math 103 College Algebra or equivalent .................................................. (3)
Math 377 Geometry for Elementary Teacher ............................................ (2)
Math Methods Electives ............................................................................ (6)
T&L 498 Special Projects: Math Practicum .............................................. (3)
Math Electives (T&L math courses or math dept.) ..................................... (10)

B.S. ED. WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND PHYSICAL EDUCATION

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. EHD General Graduation Requirements (see EHD listing).

III. Elementary Education Curriculum as listed above.

IV. The Following Physical Education Curriculum:

PEXS 107 Introduction to Physical Education ......................................... (3)
PEXS 205 Physical Education for the Elementary Grades .................. (3)
PEXS 223 Movement Performance Analysis Labs ................................. (6)
PEXS 330 First Aid and CPR .................................................................... (2)
PEXS 333/333L Introduction to Teaching in Physical Education and Sport and Sport Settings/Lab ............................................. (4)
PEXS 355 Applied Motor Development .................................................. (3)
PEXS 464 Adapted Activities Program ..................................................... (2)
PEXS 404/404L Strategies for Teaching Physical Education in the Elementary School/Lab ......................................................... (4)
PEXS 447 Senior Teaching Seminar ........................................................ (2)
Total: 31 credit hours

B.S. ED. WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND ART

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

II. EHD General Graduation Requirements (see EHD listing).

III. Elementary Education Curriculum as listed above.

IV. The Following Visual Arts Curriculum:

Minimum requirement of 12 credits of Art History including Art 210 and 211.
Minimum requirement of 36 credits of Art practicum (studio) courses.

Core Requirements:

Art 130, 230 Drawing I, II .................................................................... (6)
Art 122, 124 Two-Dimensional Design, and Three-Dimensional Design .......... (6)
Art 210 History of Art .......................................................................... (3)
Art 211 History of Art .......................................................................... (3)
Plus at least 9 credits in the following:

Art 201, 202, 203, 204 Sculpture I, II ................................................. (3, 3)
Art 204, 205, 206, 207 Printmaking I, II ............................................. (3, 3)
Art 220, 221 Painting I, II .................................................................... (3)
Art 231, 232 Figure Drawing I, II ....................................................... (3, 3)
Art 240 Printmaking I: Intaglio ................................................................ (3)
Art 241 Printmaking II: Relief and Serigraphy .................................... (3)
Art 250 Ceramics I .............................................................................. (3)
Art 253 Ceramics II: Throwing ............................................................. (3)
Art 269 Slide Photography .................................................................... (3)
Art 261 Color Printing .......................................................................... (3)
Art 274 Calligraphy .............................................................................. (3)
Art 276 Surface Design on Fabric ....................................................... (3)
Art 277 Fibers I .................................................................................... (3)
Plus a MINIMUM of 20 credits in courses selected from the following list:

Art 302, 303 Sculpture III, IV ............................................................... (3, 3)
Art 322, 323 Painting III, IV ............................................................... (3, 3)
Art 322, 323 Figure Drawing III, IV .................................................... (3, 3)
Art 340 Printmaking II: Lithography .................................................... (3)
Art 341 Printmaking III: Plate & Color Lithography ............................. (3)
Art 342, 343 Printmaking III: Intaglio ................................................... (3)
Art 344, 345 Printmaking III: Serigraphy ............................................... (3)
Art 351 Ceramics II Sculpture .............................................................. (3)
Art 355 Ceramics III Throwing .............................................................. (3)
Art 355 Clay & Glazes ........................................................................... (3)
Art 361 Concepts in Visual Arts Education ......................................... (2)
Art 365, 366 Photography Studio I, II .................................................. (3, 3)
Art 371, 372, 373 Fibers II, III, IV ......................................................... (3, 3, 3)
Art 375 Brush Lettering & Sign Painting ............................................ (3)
Art 379 Color Theory .......................................................................... (3)
Art 391a, 391b Special Topics .............................................................. (1-4)
Art 410 Art History: Selected Topics ..................................................... (3)
Art 412 Art History: 20th Century (to 1930s) ......................................... (3)
Art 490 Special Projects/Independent Research ..................................... (variable credit—dependent upon scope of project) ............. (1-12)

B.S. ED. WITH A COMBINED MAJOR IN ELEMENTARY AND MIDDLE LEVEL EDUCATION

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).

The Integrated Studies Program is recommended.

II. EHD General Graduation Requirements (see EHD listing).

III. Elementary Education Curriculum (see Elementary Education listing).

IV. The Following Middle Level Education (Grades 5-8) Curriculum:

T&L 311 Observing and Assessing Child ............................................... (3)
T&L 465 Middle Level Curriculum and Methods ................................ (5)
T&L 395 Computer Applications ............................................................ (3)
T&L 475 Field Experience: Early Childhood Education ....................... (1)
T&L 486 Middle Level Curriculum and Methods ................................ (5)
T&L 487 Middle Level Curriculum and Methods ................................ (5)
T&L 486 Field Experience .................................................................... (1)

V. Subject Matter Areas of Concentration

Students completing a combined major in Elementary and Middle Level Education must take coursework in two content areas in addition to the Elementary and Middle Level major programs of study. These programs must be planned carefully between the student and the advisor in both programs of study to ensure that the requirements for teaching in the subject areas have been met. Examples of content areas include but are not limited to: English, mathematics, science, history, geography, health, and technology education.

These requirements may be impacted by changes at the federal and state level.

Middle level advisers have lists of courses that may be recommended or required in certain areas.

In this combined major program, courses in Middle Level Education fulfill elective requirements in Elementary Education. It is recommended that students complete eight weeks of student teaching in an elementary school and eight in a middle school setting.
B.S. ED. WITH MAJOR IN MIDDLE LEVEL EDUCATION

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).
II. EHD General Graduation Requirements (see EHD listing).
III. The Following Middle Level Education (Grades 5-8) Curriculum:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&amp;L 325</td>
<td>Exploring Teaching in Secondary Schools</td>
<td>(3)</td>
</tr>
<tr>
<td>T&amp;L 330</td>
<td>Introduction to Teaching and Learning</td>
<td>(3)</td>
</tr>
<tr>
<td>T&amp;L 315</td>
<td>Education of the Exceptional Student</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Admission to teacher education is required for enrollment in all of the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&amp;L 341</td>
<td>Foundations of Middle Level Education</td>
<td>(2)</td>
</tr>
<tr>
<td>T&amp;L 350</td>
<td>Development and Education of Young Adolescents</td>
<td>(3)</td>
</tr>
<tr>
<td>T&amp;L 390</td>
<td>Technology for Teachers</td>
<td>(2)</td>
</tr>
<tr>
<td>T&amp;L 409</td>
<td>Reading in the Content Areas</td>
<td>(2)</td>
</tr>
<tr>
<td>T&amp;L 432</td>
<td>Classroom Management</td>
<td>(3)</td>
</tr>
<tr>
<td>T&amp;L 433</td>
<td>Multicultural Education</td>
<td>(3)</td>
</tr>
<tr>
<td>T&amp;L 465</td>
<td>Middle Level Curriculum and Methods</td>
<td>(5)</td>
</tr>
<tr>
<td>T&amp;L 486</td>
<td>Field Experience</td>
<td>(1)</td>
</tr>
</tbody>
</table>

A minimum of two methods courses in each area of concentration (see below) from the secondary education program and co-requisite field experience...

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&amp;L 487</td>
<td>Student Teaching</td>
<td>(16)</td>
</tr>
<tr>
<td>T&amp;L 488</td>
<td>Senior Seminar</td>
<td>(1)</td>
</tr>
</tbody>
</table>

IV. Subject Matter Areas of Concentration

B.S. ED. WITH A MAJOR IN MIDDLE LEVEL EDUCATION

In order to be considered a highly qualified teacher at the Middle Level, candidates must take coursework in two content areas in addition to the Middle Level major program of study. This program must be planned carefully between the student and the middle school advisor to ensure that the requirements for teaching in the subject areas have been met. Examples of content areas include but are not limited to: English, mathematics, science, history, geography, health, and technology education.

*These requirements may be impacted by changes at the federal and state level.

MINOR IN MIDDLE LEVEL EDUCATION

The Middle Level minor is open to students majoring in a field which leads to teacher certification at the elementary or secondary level.

The following Middle Level Education (Grades 5-8) Curriculum is required:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&amp;L 315</td>
<td>Education of the Exceptional Student</td>
<td>(3)</td>
</tr>
<tr>
<td>T&amp;L 341</td>
<td>Foundations of Middle Level Education</td>
<td>(2)</td>
</tr>
<tr>
<td>T&amp;L 350</td>
<td>Development and Education of Young Adolescents</td>
<td>(3)</td>
</tr>
<tr>
<td>T&amp;L 390</td>
<td>Technology for Teachers</td>
<td>(2)</td>
</tr>
<tr>
<td>T&amp;L 409</td>
<td>Reading in the Content Areas</td>
<td>(2)</td>
</tr>
<tr>
<td>T&amp;L 433</td>
<td>Multicultural Education</td>
<td>(3)</td>
</tr>
<tr>
<td>T&amp;L 465</td>
<td>Middle Level Curriculum and Methods</td>
<td>(5)</td>
</tr>
<tr>
<td>T&amp;L 486</td>
<td>Field Experience</td>
<td>(1)</td>
</tr>
</tbody>
</table>

Total hours: 21

Students completing the Middle Level minor with a major in Elementary Education have exceeded the endorser requirement for a highly qualified teacher (grade 7 or 8). Although, Elementary Education majors with a Middle Level minor will need to complete a major equivalence in a core academic subject. Students are encouraged to meet with the middle school advisor to ensure that the requirements for teaching in the middle school have been met.

Students completing the Middle School minor with a major in a Secondary Education academic area will be considered highly qualified in that core content area.

*These requirements may be impacted by changes at the federal and state level.

Secondary Education

Secondary Education Certification Preparation Sequence

Pre-admission

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&amp;L 325</td>
<td>Exploring Teaching in Secondary Schools</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Admission to Teacher Education is required for enrollment in all of the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&amp;L 35</td>
<td>Curriculum Development and Instruction</td>
<td>(3)</td>
</tr>
<tr>
<td>T&amp;L 390</td>
<td>Special Topics</td>
<td>(1-3)</td>
</tr>
<tr>
<td>T&amp;L 390</td>
<td>Development and Education of the Adolescent</td>
<td>(3)</td>
</tr>
<tr>
<td>T&amp;L 386</td>
<td>Field Experience, elective</td>
<td>(1)</td>
</tr>
<tr>
<td>T&amp;L 400</td>
<td>Methods and Materials</td>
<td>(3)</td>
</tr>
<tr>
<td>T&amp;L 433</td>
<td>Multicultural Education</td>
<td>(3)</td>
</tr>
<tr>
<td>T&amp;L 460</td>
<td>Microteaching</td>
<td>(2)</td>
</tr>
<tr>
<td>T&amp;L 486</td>
<td>Field Experience</td>
<td>(1)</td>
</tr>
<tr>
<td>T&amp;L 487</td>
<td>Student Teaching</td>
<td>(16)</td>
</tr>
<tr>
<td>T&amp;L 488</td>
<td>Senior Seminar</td>
<td>(1)</td>
</tr>
</tbody>
</table>

**T&L 488** Senior Seminar ...

or

**T&L 488** Senior Seminar ...

B.S.ED. WITH MAJOR IN SCIENCE

Required 125 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).
II. EHD General Graduation Requirements (see EHD listing).
III. The Following Science Curriculum:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 150L, 151L</td>
<td>General Biology I &amp; II</td>
<td>(6)</td>
</tr>
<tr>
<td>Chem 121/121L</td>
<td>Introduction to Global Climate and Lab.</td>
<td>(3)</td>
</tr>
<tr>
<td>Chem 333</td>
<td>Introduction to Environmental, Clinical, and Forensic Analysis</td>
<td>(4)</td>
</tr>
<tr>
<td>Math 165, 166</td>
<td>Calculus I and II</td>
<td>(8)</td>
</tr>
<tr>
<td>Phys 251, 251L</td>
<td>University Physics I and II and Laboratories</td>
<td>(8)</td>
</tr>
<tr>
<td>Phys 223, 223L</td>
<td>Introduction to Astronomy and Lab.</td>
<td>(4)</td>
</tr>
</tbody>
</table>

3-4 hours from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 341</td>
<td>Cell Biology</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 357</td>
<td>Genetics</td>
<td>(3)</td>
</tr>
<tr>
<td>Biol 442</td>
<td>Physiology of Organs &amp; Systems</td>
<td>(4)</td>
</tr>
</tbody>
</table>

3-4 hours from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geog 262</td>
<td>Geography of North America</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Students are strongly encouraged to get a minor in biology, chemistry, or physics when the B.S.Ed. in Science is their degree program.

B.S.ED. WITH COMPOSITE MAJOR IN SOCIAL STUDIES

Required 125 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing).
II. The College of Education and Human Development (see EHD listing).
III. The Following Curriculum:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anth 100</td>
<td>Introduction to Anthropology</td>
<td>(3)</td>
</tr>
<tr>
<td>Anth 171</td>
<td>Introduction to Cultural Anthropology</td>
<td>(3)</td>
</tr>
<tr>
<td>Anth 172</td>
<td>Introduction to Archaeology and World Prehistory</td>
<td>(3)</td>
</tr>
<tr>
<td>Anth elective 300 level and above...</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Econ 105</td>
<td>Elements of Economics</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 420</td>
<td>Economic Education</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 330</td>
<td>Business and Economic History</td>
<td>(3)</td>
</tr>
<tr>
<td>Geog 161</td>
<td>World Regional Geography</td>
<td>(3)</td>
</tr>
<tr>
<td>Geog 262</td>
<td>Geography of North America</td>
<td>(3)</td>
</tr>
</tbody>
</table>
Instructional approaches and service delivery models will also be explored. F, S

emotional disturbance, learning disabilities, and cognitive/developmental disabilities. Students who are mentally handicapped in any manner are explored. F, S

dealing with the etiology of conditions and the characteristics affecting individuals with prevalent classroom behaviors which might indicate emotional disturbance. Current especially for classroom teachers, stressing the identification, characteristics and educative processes for involving primary level children (grades P-3) in experiencing their language. The course emphasizes integrating reading, writing, speaking and listening with content areas and as forms of creative, personal expression. F, S

345. Curriculum Development and Instruction. 3 credits. Prerequisites: T&L 325 and admission to teacher education. A general curriculum development and instruction course designed for the undergraduate pre-service teacher. It will focus on identifying the undergraduate with (1) an operating philosophy and its effects on teaching; (2) curriculum, (3) curriculum development, (4) instruction, and (5) instructional planning. The functions of thoughtful planning and evaluation in effective teaching will be emphasized. F,S

500. Development and Education of the Adolescent. 3 credits. Prerequisites: T&L 325 and admission to the professional program. A comprehensive examination of the characteristics and behavior of the adolescent student with implications for curricular and instruction in the junior high and high schools. Topics covered will be transition from childhood to adolescence, including cognitive development, self-concept, physiological changes, social needs, values, and values and attitudes of adolescents. This course will provide an understanding of the wide range of differences in developmental patterns of children and the influences of economic, sociological and psychological factors in development. F,S

386. Field Experience. 1 credit. Prerequisites: T&L 325 and admission to the professional program. Supervised tutorial or apprentice teaching experience in an early childhood, K-12 classroom, university or community setting approved by the program area. Optional. S/U grading. F,S

319. Introduction to Early Childhood Education, 3 credits. Corequisites: T&L 486. An overview of the early childhood education field, including an introduction to its historical roots, current trends, program models and issues, curriculum development, and typical and atypical development of young children. F, S

391. Observe and Assess Child. 3 credits. This course acquaints the student with a variety of ways of observing, recording, and analyzing the behavior and development of children. Assessment of children will be analyzed by looking at a variety of assessment activities that can be used with children. F

313. Language Development and Emerging Literacy. 3 credits. This course examines both typical and atypical development of language and thought in children 0-8. Children’s emergent literacy is studied within the context of language development. F

314. Social and Emotional Development and Guidance of Children. 3 credits. This course examines both typical and atypical social and emotional development in children ages 0-8 as a basis for understanding and working with children in educational settings. The course will also focus on child guidance and behavior issues affecting classroom climate. S

315. Education of Exceptional Students. 3 credits. An orientation course, especially for classroom teachers, stressing the identification, characteristics and educational problems of exceptional children. A field exercise is part of this course. F, S

316. Introduction to the Emotionally Disturbed Child. 2 credits. A survey of prevalent classroom behaviors which might indicate emotional disturbance. Current classroom approaches to the needs of the disturbed child will be explored. F, S

317. Introduction to Mental Retardation. 2 credits. Methods and programs for students who are mentally handicapped in any manner are explored. F, S

318. Introduction to Learning Disabilities. 2 credits. An introductory course dealing with the etiology of conditions and the characteristics affecting individuals with learning disabilities. The various instructional approaches and service delivery models will also be explored. F, S

319. Introduction to ED, LD, and C/DD. 3 credits. An introductory course dealing with the etiology of conditions and the characteristics affecting individuals with emotional disturbance, learning disabilities, and cognitive/developmental disabilities. Instructional approaches and service delivery models will also be explored. F, S

325. Exploring Teaching in Secondary Schools. 3 credits. Prerequisite: Sophomore status (at least 30 credits). This course is designed for students exploring the profession of teaching in a secondary or middle school as a viable career choice for them. A classroom field experience is included in this course to provide the realities of the profession in making an informed decision. As an integral part of the Secondary Education Program Area, this course introduces students to the INTASC Principles which guide our preparation of teachers and the Portfolio Process, the program’s assessment tool. This course is also taken by students preparing for K-12 or middle school licensure. F,S

328. Survey of Children’s Literature. 3 credits. Students survey the broad range of literature written for children. Emphasis is placed on gaining familiarity with multicultural literature, understanding the distinguishing characteristics of genre, developing visual literacy with respect to picture books, evaluating the quality of literature for children, and how an individual’s development affects interest and use of literature. Investigating internet and traditional library resources support student learning. Course content: F, S

329. Young Adult Literature. 3 credits. Discussion and critical evaluation of contemporary literature, both adolescent and adult, which is of interest to young adults, with an emphasis on fiction, drama, poetry, essays, and biographies. On demand. 330. Introduction to Teaching and Learning. 3 credits. An introductory course designed to teach the study of education. The course explores how children differ, how society and schools respond to children’s differences, and how the social and political contexts of schooling affect children’s education. Students have the opportunity to visit schools, view films and videos related to education, explore children’s literature, and to participate in role-playing, simulations, and peer teaching. F,S

335. Understanding Readers and Writers. 3 credits. This foundational course explores the developmental nature of literacy learning, including reading and writing processes, and the conditions for successful literacy learning. Holistic methods for assessing language development are studied to understand individual language learners. F,S

341. Foundations. 2 credits. Prerequisite: Admission to Teacher Education. This course promotes understanding the needs of early adolescent students and of the interdisciplinary, collaborative teaching approaches associated with the middle school philosophy. The course addresses the components of organization. F

345. Curriculum Development and Instruction. 3 credits. Prerequisites: T&L 325 and admission to teacher education. A general curriculum development and instruction course designed for the undergraduate pre-service teacher. It will focus on acquainting the undergraduate with (1) an operating philosophy and its effects on teaching; (2) curriculum, (3) curriculum development, (4) instruction, and (5) instructional planning. The functions of thoughtful planning and evaluation in effective teaching will be emphasized. F,S

350. Development and Education of the Adolescent. 3 credits. Prerequisites: T&L 325 and admission to the professional program. A comprehensive examination of the characteristics and behavior of the adolescent student with implications for curricular and instruction in the junior high and high schools. Topics covered will be transition from childhood to adolescence, including cognitive development, self-concept, physiological changes, social needs, values, and values and attitudes of adolescents. This course will provide an understanding of the wide range of differences in developmental patterns of children and the influences of economic, sociological and psychological factors in development. F,S

386. Field Experience. 1 credit. Prerequisites: T&L 325 and admission to the professional program. Supervised tutorial or apprentice teaching experience in an early childhood, K-12 classroom, university or community setting approved by the program area. Optional. S/U grading. F,S

399. Special Topics. 1-3 credits. May be repeated. 3 Other approved courses may meet this requirement. Prerequisites: T&L 325 and admission to teacher education.

400. Methods and Materials. 3 credits. Prerequisites: T&L 325, 345 and admission to the professional program. Corequisites: T&L 486. Various teaching methods and strategies and the materials used in teaching in a subject area. Some offered F only; some F,S. See adviser. (Some Methods and Materials courses carry an academic department prefix and number. The number of methods courses required by a department may vary. Consult with an adviser.)

409. Reading in the Content Areas. 2 credits. This course addresses issues of using text, expository and narrative, within the content areas (i.e., science, social studies). Writing and integration within and across the curriculum of the elementary classroom are investigated. F,S

410. Teaching Reading and Writing in the Elementary School (TEAM). 3 credits. Prerequisites for elementary majors. Admission to Teacher Education, T&L 335, 328 or 329 Corequisites: T&L 430, 440, 470, 486. Prerequisites for early childhood majors: Admission to Teacher Education, T&L 310/480, 315, 328, 335 and 443 Corequisites: T&L 430, 440, 470, 486. In this course, 3 credits: An introductory course dealing with the etiology of conditions and the characteristics affecting individuals with learning disabilities. The various instructional approaches and service delivery models will also be explored. F, S

411. Primary Reading and Language Arts. 2 credits. Prerequisites: Admission to Teacher Education. T&L 335. This course explores a wide variety of instructional practices for involving primary level children (grades K-3) in experiencing their language. The course emphasizes integrating reading, writing, speaking and listening with content areas and as forms of creative, personal expression. F,S

412. Intermediate Language Arts. 2 credits. Prerequisites: Admission to Teacher Education. T&L 335 and T&L 328 or T&L 329. This course explores a wide variety of instructional practices of involving intermediate level children (grades 3-6) in experiencing their language. The course emphasizes integrating reading, writing, speaking and listening with content areas and as forms of creative, personal expression. F,S
413. Assessing and Correcting Reading Difficulties. 2 credits. Prerequisite: Admission to Teacher Education, T&L 335. The Corrective Reading Practicum (T&L 414) is required as corequisite with T&L 413. The focus of this course and practicum is to learn about current approaches to assessment and methods to assist students who are having difficulty with reading and writing. Observation, misread analysis, interviews, and other holistic evaluation procedures are used to learn about reader and writers, and these assessments are used to plan for instruction. F,S,SS

414. Corrective Reading Practicum. 2 credits. Prerequisite: Admission to Teacher Education, T&L 335. Corequisite to T&L 413. This is the practicum for Corrective Reading. The student will plan, observe, evaluate, plan for and teach children who are having difficulty with reading and/or writing. F,S,SS

415. Reading and Writing Development of Bilingual Second Language Learners. 2 credits. This course addresses the foundations of teaching individuals who are learning to read and write in English as a second language. Culturally appropriate approaches to assessment and methods of increasing the comprehensibility of instruction are examined. S

421. Transition to Adult Life. 2 credits. Systematic methods and curriculum which encourage successful adult life for individuals with disabilities. Subject matter includes interagency cooperation transition program development, career awareness, career development, and planning for operating agencies and programs. Special assessment and teaching methods from the vocational domain are covered. S

422. Development of the Gifted and Talented. 2 credits. Research and theory for understanding the development of the more able child in early childhood and in educational experiences. S

423. Assessment Plan Planning/Special Needs Students. 3 credits. A study of the principles and practices of: (1) obtaining diagnostic information on school related problems of a student; (2) assimilating this information and prescribing appropriate alterations based on continuous measurement data. F,S

425. Methods and Materials for Elementary Music. 3 credits. Overview of methods and materials in elementary music for major music and minors. Includes experiences for the practical application of course content. F

428. Assistive Technology. 1 credit. An overview of the various forms of technology (e.g., communication boards, switches, software) that may be used to assist students with disabilities. F,S,SS

430. Social Studies in the Elementary School (TEAM). 3 credits. Prerequisites for elementary education majors. A grade of C or better in the following courses: T&L 330, 315, 328 or 329, 335 and Math 277, and GPA of 2.75 or better in the following courses: T&L 310, 335, 328, 335 and 443; and GPA of 2.75 in the Early Childhood major. Corequisites: T&L 410, 460, 470, 486. To understand and analyze the different modes of teaching social studies, to gain the competencies necessary for organizing a unit in the social studies, to gain an understanding of the various and multiple perspectives inherent within the various teaching strategies, to develop a preferred perspective on the ideal nature of Social Studies education. F,S

431. Teaching Hispanic Children. 2 credits. Hispanics, generally, and Mexican Americans in particular, are the fastest growing segment of our population. Unfortunately, many people have limited knowledge of the rich history, culture(s), and educational needs of Hispanics. The purpose of this class is to introduce future teachers to this exciting group.

432. Classroom Management. 3 credits. Prerequisite: Admission to Teacher Education. The purpose of this class is to study factors that influence classroom behavior and examine the use of techniques that can be used in planning for positive classroom management. This course views classroom management from a humanistic perspective but does not assume a single method as the “best” approach. Students are expected to develop their own eclectic style during the course of this class. F,S,SS

433. Multicultural Education. 3 credits. Prerequisite: Admission to Teacher Education. This class takes an anthropological view of multicultural education. It will help students understand the distinct cultural and socially diverse classrooms as well as preparing them to teach about cultural diversity. This class examines several cultures but is particularly interested in Native Americans of North Dakota. F,S,SS

434. How Children Learn. 3 credits. How Children Learn is designed to investigate the dynamics of learning. The course will focus on ideas, research findings, issues and theories, as well as examining the effects of motivation, self-concept, social-ethnic concerns, group dynamics, teacher expectations, and other relevant issues. The focus is on the understanding, meaning, and experiences involved in growth, teaching, and learning. F

435. Home School Relations. 3 credits. The course is an exploration of home-school relations. The content will include history, parental involvement in schools, parent-teacher conference, home visits, parent programs, and resources for parents.

441. Math for Elementary Education (TEAM). 3 credits. Prerequisites for elementary education majors: Admission to Teacher Education, Math 277, Math 103 or equivalent, or higher level math course, or score high enough on the CLEP subject exam, or a score of 520 or better on the SAT or ACT. Corequisites: T&L 410, 430, 470, 486. Prerequisites for early childhood majors: Admission to Teacher Education. Corequisites: T&L 410, 430, 470, and 486. T&L 410 is the required methods mathematics course for all undergraduate elementary education majors. Students explore how to facilitate learning of mathematics in a constructivist environment through the use of investigations, manipulatives, technology, and holistic forms of assessment. Current trends in teaching mathematics are emphasized, with particular attention to documents created by the National Council of Teachers of Mathematics. F

443. Math for Primary Grades. 2 credits. Math for Primary Grades is an elective course that focuses on curriculum and methods for teaching mathematics in grades one through six. The course focuses on teaching mathematics and understanding in a cooperative environment and involves participants in projects and activities that develop conceptual understanding. F

453. Methods and Materials: Pre-Kindergarten. 3 credits. Prerequisite: T&L 310. Exploration of curriculum, methods and materials for use in pre-kindergarten educational settings. Includes selection of materials, creative environments, and planning for the individual needs of children within a group setting. F

455. Methods and Materials: Early Childhood. 2 credits. Prerequisite: Admission to Teacher Education or graduate. An investigation of patterns of administration, curriculum, development, and staffing in those early childhood settings serving children 0-8 years old. Topics will also include federal and state law and building trends in preschool to lower primary educational patterns in the state, region, and nation. S

456. Comparative Approaches to the Education of Children. 3 credits. Prerequisites: T&L 310, 312, 313, 314. Exploration of curriculum, methods, and materials for use in kindergarten science. S

458. Organization and Leadership in Early Childhood Education. 2 credits. Prerequisite: Admission to Teacher Education or graduate. An investigation of patterns of administration, curriculum, development, and staffing in those early childhood settings serving children 0-8 years old. Topics will also include federal and state law and building trends in preschool to lower primary educational patterns in the state, region, and nation. S

459. Middle Level Curriculum and Methods. 5 credits. Prerequisites: T&L 341, 414. This methods course takes a hands-on approach to increasing understanding of the various methods and strategies for teaching early adolescent students. This course addresses approaches, strategies, materials, and a content area knowledge base necessary for promoting student learning and success in a middle school setting. S

471. Physical Science in the Elementary School. 2 credits. Hands-on approach to learning basic physical science topics such as electricity, sound, light, and force. Effective teaching strategies are also emphasized. F,S

472. Teaching Life Sciences in the Elementary School. 2 credits. Hands-on approach to learning basic biological topics such as cells, plants, animals, and ecosystems. Effective teaching strategies are also emphasized. F,S

473. ND: Environmental Earth Science Perspective. 2 credits. Hands-on approach to learning basic earth science topics such as erosion, plate tectonics, water quality, and pollution in general. Effective teaching strategies area also emphasized. S

486. Field Experience. 1-4 credits. (Repeatable to 16). Prerequisite: Permission of program chair. Supervised tutorial or apprenticeship teaching experience in an early childhood center. K-12 classroom, university, or community setting approved by the program area. S/U grading. F,S

487. Student Teaching. 4-16 credits. If repeated, Student Teaching would be taken in a different program area. Prerequisite: Permission of program chair. Provides students with the opportunity to assume the role of a classroom teacher in an educational setting under the supervision of a cooperating teacher and a University faculty member. S/U grading. F,S

488. Senior Seminar. 1 credit. S/U grading only. A discussion of problems, professional obligations, and careers in teaching. To be taken concurrently with or the semester prior to student teaching.

489. Workshop. 2-5 credits. (May be repeated to a total of 8 credits) Special problems in Special Education; consideration of special problems of concern to the Special Education teacher and other educators. F,S

495. Independent Study. 1-4 credits, repeatable to 8. This course is designed for the interested student's pursuit of an area of study not offered through regular courses. In addition, students may continue to pursue subject matter covered in courses in a graduate or professional program. S

496. Special Projects. 1-8 credits. Course number reserved for committee approved proposals, independent study, special colloquia, or experimental courses. F,S

443. Math for Primary Grades, 2 credits. Math for Primary Grades is an elective course that focuses on curriculum and methods for teaching mathematics in grades one through six. The course focuses on teaching mathematics and understanding in a cooperative environment and involves participants in projects and activities that develop conceptual understanding. F
Theatre Arts
(Thea)
McLennan (Chair), Burgess, Cutler, Gillette, Jacobs, and Williams

The Department of Theatre Arts strives to promote integration of the creative arts for the campus, community and region by fostering a climate of creativity and cultural enrichment, and instilling an appreciation and understanding of theatre and drama in our students, faculty and the community. While serving the university academically and culturally, the theatre offers diverse practical and aesthetic assets whether the student has professional or non-professional aspirations. Participation and training in theatre arts leads the student to an understanding of the creative process in the performance and the technical areas of the theatre arts.

A diversified faculty are personally involved in and teach the various areas of the theatre arts, i.e., playwriting, acting, voice, movement, directing, history, dramatic literature, technical theatre, costume, set design, lighting, and make-up. The Department of Theatre Arts aims to provide information as a service to the public, copyright is retained on all digital catalogs.

The curriculum of the Department of Theatre Arts provides students with opportunities to pursue either of the undergraduate degrees of Bachelor of Fine Arts or Bachelor of Arts, as well as the Master of Arts degree at the graduate level. Major concentrations in most of the Theatre Arts areas stated in the preceding paragraph are available to candidates for any of the previously listed degrees, although the curriculum assures a well-rounded experience in the chosen discipline and the other fine arts. The Bachelor of Fine Arts is a pre-professional degree, and it requires a higher level of proficiency in theatrical production and is an appropriate preparation for students who desire theatrical careers.

The instructional program of the Department is integrated with the production programs of the Burtness Theatre which provide broad practical experience for the students in theatre arts. The Burtness Theatre produces four or five major productions during the academic year, generally including an opera or musical. Several experimental or workshop productions, with student directors and designers, are staged each year in the Studio Theatre.

The regular season of productions is designed to offer a series of contrasting literary and production styles, thereby challenging and enlightening both participants and audiences.

The Bachelor of Fine Arts program in Theatre Arts is offered to students with marked abilities who desire an intensive undergraduate concentration in Theatre Arts, in preparation for either a career in professional theatre, or graduate study leading to the MFA, or both. Candidates accepted for the program will be expected to maintain a high standard of excellence and to demonstrate significant artistic growth.

Candidates seeking admission to the BFA program must submit an application to the chairperson who will then schedule an audition or portfolio presentation and personal interview for the candidate with the Theatre Arts faculty. BFA applications are generally accepted in February with screening held in March. Upon acceptance, the student will be assigned a faculty adviser. Each student will be reviewed annually by Theatre Arts faculty, which will make a recommendation concerning the student’s status in the BFA program, based on the student’s performance in classes and in production activities. If probation is recommended, students may apply for readmission at the completion of a full semester of satisfactory work. Readmission will be contingent upon faculty evaluation.

As part of the department’s outcomes assessment plan, all Theatre Arts majors are required to complete an exit interview, an attitudes survey upon entrance to and completion of the degree, along with various other assessment tools beyond those specifically listed for BFA students. For complete information concerning outcomes assessment in Theatre Arts consult the departmental chairperson.

College of Arts and Sciences
B.F.A. WITH A MAJOR IN THEATRE ARTS

Required 125 credits (36 of which must be numbered 300 or above, and 60 of which must be from a 4-year institution) including:

I. General Education Requirements (see University GER listing) 39 credit hours.

II. The Following Curriculum:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Thea 122</td>
<td>Makeup for Theatre and Television</td>
<td>(1)</td>
</tr>
<tr>
<td>Thea 130</td>
<td>The Art and Craft of Theatre</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 161</td>
<td>Acting I</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 201</td>
<td>Theatre Practicum</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 226</td>
<td>Intro to Design</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 250</td>
<td>Readings in Dramatic Literature</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 270</td>
<td>Stagecraft</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 350</td>
<td>Contemporary Theatre</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 315/316</td>
<td>Shakespeare</td>
<td>(3)</td>
</tr>
<tr>
<td>Thea 423</td>
<td>History of the Theatre: Classical, Medieval,</td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td>Renaissance</td>
<td></td>
</tr>
<tr>
<td>Thea 424</td>
<td>History of the Theatre: 17th Century to the</td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td>Present</td>
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<tr>
<td>Tha 426</td>
<td>Scene Design for the Theatre</td>
<td>(3)</td>
</tr>
<tr>
<td>Tha 425</td>
<td>Directing II</td>
<td>(3)</td>
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<tr>
<td>Tha 426</td>
<td>Scene Design</td>
<td>(3)</td>
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</table>

C. From one of the following tracks:

1. Performance
   a. Required: 31 credits
      Tha 120    Voice and Movement I                  | (2)     |
      Tha 162    Introductory Acting II               | (3)     |
      Tha 220    Voice and Movement II                | (2)     |
      Tha 271    Intermediate Acting I                | (3)     |
      Tha 320    Voice and Movement III               | (2)     |
      Tha 371    Advanced Acting I                    | (3)     |
      Tha 372    Advanced Acting II                   | (3)     |
      Tha 420    Voice and Movement IV                | (2)     |
      Tha 471    Advanced Acting Styles               | (3)     |
      Tha 481    Theatre Practicum                    | (1)     |
      Tha 494    Senior Project                       | (4)     |
      b. Electives: 12 credits from the following:
         Tha 222    Advanced Makeup                     | (1)     |
         Tha 229    Creative Dramatics                 | (3)     |
         Tha 325    Scenecraft                        | (3)     |
         Tha 326    Lighting I                        | (2)     |
         Tha 339    Production Design                  | (3)     |
         Tha 404    Acting for the Music Theatre       | (3)     |
         Tha 425    Directing II                      | (3)     |
         Tha 426    Scene Design                      | (3)     |
      or Tha 427    Costume Design                   | (3)     |

2. Design and Technical Theatre
   a. Required: 31 credits
      Music courses in History/Theory                | (3)     |
      Art courses in History/Theory                  | (3)     |
      Music or Art courses in Applied Art            | (3)     |
      Tha 326    Lighting for Stage I                 | (2)     |
      Tha 339    Production Design                   | (3)     |
      Tha 426    Scene Design for the Stage          | (3)     |
      Tha 427    Costume Design                      | (3)     |
      Tha 481    Theatre Practicum                   | (7)     |
      Tha 494    Senior Project                      | (4)     |
      b. Electives* 12 credits from the following:
         Tha 222    Advanced Makeup                     | (1)     |
         Tha 325    Scene Craft                        | (3)     |
         Tha 336    Lighting for Stage II              | (2)     |
         Tha 426    Scene Design for the Stage         | (3)     |
      or Tha 427    Costume Design                   | (3)     |

*Courses to be approved by adviser
IV. The following curriculum:
33 credits, including:

<table>
<thead>
<tr>
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<tbody>
<tr>
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<tr>
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<td>Acting I</td>
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<td>Thea 201</td>
<td>Theater Practicum</td>
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<tr>
<td>Thea 226</td>
<td>Intro to Design</td>
<td>3</td>
</tr>
<tr>
<td>Thea 230</td>
<td>Readings in Dramatic Literature</td>
<td>3</td>
</tr>
<tr>
<td>Thea 270</td>
<td>Stagecrafts</td>
<td>3</td>
</tr>
<tr>
<td>Thea 300</td>
<td>Play Direction I</td>
<td>3</td>
</tr>
<tr>
<td>Thea 330</td>
<td>Contemporary Theatre</td>
<td>3</td>
</tr>
<tr>
<td>Thea 423</td>
<td>History of Theatre: Classical Medieval &amp; Renaissance</td>
<td>3</td>
</tr>
<tr>
<td>Thea 424</td>
<td>History of Theatre: 17th Century to the Present</td>
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4 hours from the following:

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<td>Creative Dramatics</td>
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</tr>
<tr>
<td>Thea 230</td>
<td>Text Analysis</td>
<td>1</td>
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<tr>
<td>Thea 271</td>
<td>Intermediate Acting I</td>
<td>1</td>
</tr>
<tr>
<td>Thea 325</td>
<td>Scenecraft</td>
<td>1</td>
</tr>
<tr>
<td>Thea 326</td>
<td>Lighting for Stage I</td>
<td>1</td>
</tr>
<tr>
<td>Thea 425</td>
<td>Play Direction II</td>
<td>1</td>
</tr>
<tr>
<td>Thea 427</td>
<td>Costume Design</td>
<td>1</td>
</tr>
<tr>
<td>Thea 481</td>
<td>Theater Practicum</td>
<td>1</td>
</tr>
<tr>
<td>Thea 488</td>
<td>Playwriting</td>
<td>1</td>
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MINOR IN THEATRE ARTS

Required 23 credits, including:

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<tr>
<td>Thea 201</td>
<td>Theater Practicum</td>
<td>1</td>
</tr>
<tr>
<td>Thea 270</td>
<td>Stagecrafts</td>
<td>3</td>
</tr>
<tr>
<td>Thea 300</td>
<td>Play Direction I</td>
<td>3</td>
</tr>
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</table>

3 hours from the following:

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<tbody>
<tr>
<td>Thea 423</td>
<td>History of Theatre</td>
<td>3</td>
</tr>
<tr>
<td>Thea 424</td>
<td>History of Theatre</td>
<td>3</td>
</tr>
</tbody>
</table>

3 hours from the following:

<table>
<thead>
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<th>Course</th>
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</thead>
<tbody>
<tr>
<td>Thea 250</td>
<td>Readings in Dramatic Literature</td>
<td>3</td>
</tr>
<tr>
<td>Thea 330</td>
<td>Contemporary Theatre</td>
<td>3</td>
</tr>
</tbody>
</table>

Courses

110. Introduction to Theatre Arts. 3 credits. Basic orientation and historical perspective to theatre arts. Study of the roles of playwright, director, actor, designer, producer, and audience members in current theatre practice. Course will include attendance at area performances. F

120. Voice and Movement I. 2 credits. Prerequisites: Thea 161 or 162 or consent of instructor. Development of the student’s physical and vocal awareness. Emphasis on freeing the actor and identifying personal habitual response patterns. F

122. Makeup for Theatre and Television. 1 credit. Principles of theatrical and television makeup with practical experience in the classroom. F, S

130. The Art and Craft of Theatre. 3 credits. Introduction to basic principles, theory, and techniques of theatrical performance. Examines theatre with emphasis on character development through improvisation and script. F, S

161. Acting I. 3 credits. Basic principles of acting with emphasis on movement, character development through improvisation and script. F, S

162. Introductory Acting II: Playing the Part. 3 credits. Prerequisites: Thea 161 or consent of instructor. A continuation of Theatre 161, integrating the creative process in acting with the dramatic text. S

201. Theatre Practicum. 1 credit. Participation in theatre pre-performance and performance capacities, both technical and acting, under faculty direction. Repeatable to 8 hours. F, S. 210. Selected Topics in Theatre. 1-3 credits. Repeatable up to 9 credits. Topics of special interest to faculty and students, such as Stage Management, and others. On Demand.

220. Voice and Movement II. 2 credits. Prerequisites: Thea 120 or consent of instructor. A continuation of Theatre 120 with a focus on freeing the channel for sound range, resonance, tone, economy of movement, natural mask and movement improvisation. S

222. Advanced Makeup. 1 credit. Prerequisite: Thea 122 or consent of instructor. A continuation of 122 with emphasis on various prosthetic techniques, mask building, and non-realistic styles. F

226. Intro to Design. 3 credits. Introduces the student to the principles and elements of design, the design process, and the methods of presentation of design ideas. F

229. Creative Dramatics. 3 credits. The study of theatre games, improvisations and techniques as they relate to the education and development of creativity in children. On demand.

230. Text Analysis. 3 credits. Prerequisite: Tha 130. An analysis of the script text from the standpoint of production and performance. F

250. Readings in Dramatic Literature. 3 credits. Readings in dramatic literature from ancient to contemporary, with a strong emphasis on written and verbal analysis of realist texts. S/F

270. Stagecraft. 3 credits. Designed to familiarize the student with crafts and technologies of production, scenery construction, costume technology, lighting, sound equipment, sound techniques. Practical experience, shop procedures and safety practices are tied to lab experience in University productions. S

271. Intermediate Acting I: The Actor in You. 3 credits. Prerequisites: Thea 161 or 162 or consent of instructor. An introduction to the Meisner Technique with special emphasis on working together and discovering your truth in your art. Students advised to enroll concurrently in Thea 120. F

272. Intermediate Acting II: The Psychology of Acting Through Advanced Scene Study. 3 credits. Prerequisite: Thea 271. An introduction to the psychology of performance and application of skills from Thea 271 and 162 to contemporary realism scripts making advanced demands on the actor. Students are advised to enroll concurrently in Thea 220. S

280. Play Direction I. 3 credits. Prerequisites: Thea 161 and two credits in dramatic literature, or equivalent acting experience, or consent of instructor. Principles and techniques of directing for the theatre. Student laboratory directing experiences. F

280. Voice and Movement III. 2 credits. Prerequisite: Thea 220. A sequential continuation of Thea 220. Vocal emphasis on shaping and muscularity of sounds and words, articulation, love of language and vocal flexibility. Physical emphasis on creative physical characterizations through mask work. F

325. Scene Craft. 3 credits. Prerequisites: Thea 226 and 270. Specialized construction and rigging of scenery, advanced technology applications to the stage, drafting projects and practical problem solving. On Demand.

326. Lighting for Stage I. 2 credits. Prerequisite: Thea 270 or consent of instructor. The principles, mechanics and design of stage and television lighting; its relationship to set, makeup and costume design. S

330. Contemporary Theatre. 3 credits. Readings in dramatic literature from 1880-1900s to contemporary times. Strong emphasis on written and verbal analysis of current dramatic techniques beyond realism. S/F

335. Lighting for Stage II. 2 credits. Prerequisite: Thea 270, or consent of instructor. This course is specifically designed to develop a lighting aesthetic for directors, designers, and technicians. There will be a script analysis with practical application, plus laboratory participation in University Theatre productions. F

339. Production Design. 3 credits. Prerequisites: Thea 130, 226, 270, and 300, or consent of instructor. Development of the entire theatrical event, from conception to closing, with particular attention to the collaboration of various artists, craftsmen, and managers. S

350. Dramatic Production and Criticism. 3 credits. Prerequisites: Thea 130 and 250, or consent of instructor. An examination of the principles of production criticism and the application of those principles to a series of theatrical productions. F/S

371. Advanced Acting I: The Meisner Challenge. 3 credits. Prerequisites: Thea 272 and admittance to BFA program. Special problems and challenges for the actor to overcome through advanced study in the Meisner Technique. Primary focus on emotional preparation. Students are advised to enroll concurrently in Thea 120. F/S


397. Cooperative Education. 1-6 credits, repeatable to 12. Prerequisites: 2.5 GPA, junior standing. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement among student, department, and employer.

404. Acting for the Music Theatre. 3 credits. Prerequisite: Consent of instructor. Appreciation of and performance in musical theatre including: voice and movement work, acting, and stage craft. S

415. Selected Problems in Theatre Arts. 1-3 credits. Repeatable up to 9 credits. Topics of special interest to faculty and students, such as Theatre Management, Women’s...
Women Studies

Women Studies at the University of North Dakota is an interdisciplinary academic program which includes courses from the traditional disciplines, as well as an introductory course, a theory course, and a senior study offered through the College of Arts and Sciences. In Women Studies courses, women are the subject rather than the object of study. Using gender as a category of analysis, courses examine women’s experiences and the institutions and systems that affect women’s lives and, as well, examine how women in turn have shaped these institutions and systems to meet their and society’s needs. These understandings are as important for men as for women.

The Women Studies Program at UND was established in 1982, and a minor was approved by the Board of Higher Education in 1984. Students planning careers in law, business, medicine, education, service, and the sciences find a minor in Women Studies to be a useful complement. Other students choose Women Studies courses to provide coherence in their General Education Requirements. The Interdisciplinary Studies Program includes an option for a major in Women Studies.

College of Arts and Sciences

MAJOR IN INTERDISCIPLINARY STUDIES: WOMEN STUDIES

I. General Education Requirements (see University GER listing).

II. Interdisciplinary Studies Program Requirements:

A minimum of 36 credits, including:

- IDS 290: Learning Across Disciplines
- IDS 491: Capstone Interdisciplinary Seminar (not repeatable)
- IDS 498: Senior Project

In addition, students prepare a program of study listing the courses to be used to complete major requirements, which must be approved by an IDS adviser and the IDS Executive Committee before no more than a third of the courses have been completed.

III. Women Studies Requirements (21 credits min.):

A&S 225: Introduction to the Study of Women
A&S 480: Feminist Theory
Engl 357: Women Writers and Readers
Hist 332: Women in American History to 1865
Hist 333: Women in American History since 1865
Rel 116: Women and Religion
Soc 340: Sociology of Gender & Sex Roles

The following courses are commonly included in students’ programs: A&S 492: Senior Study, Women’s Studies (1-4), Comm 310: Media & Diversity, CJ 361: Victimology (3), IS 346: Contemporary Indian Women (3), Soc 335: The Family, as well as other courses in various departments cross-listed each semester in the Time Schedule of Classes.

MINOR IN WOMEN STUDIES

Twenty credits of courses in Women Studies completed with a GPA of at least 2.0 are required for the minor.

I. Required courses (total credits 6):

- A&S 225: Introduction to the Study of Women
- A&S 480: Feminist Theory

II. At least three of the following (total credits 9):

- Engl 357: Women Writers and Readers
- Hist 332: Women in American History to 1865
- Hist 333: Women in American History since 1865
- Rel 116: Women and Religion
- Soc 340: Sociology of Gender & Sex Roles

III. At least five hours from the following and from courses in various departments cross-listed each semester in the Time Schedule of Classes:

- A&S 492: Senior Study, Women’s Studies
- Comm 310: Media and Diversity
- CJ 361: Victimology
- IS 346: Contemporary Indian Women
- Soc 335: The Family

Students may declare a minor through the College of Arts and Sciences and should also contact the Director of Women Studies and one other member of the Women Studies faculty to design a program of study.
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(Also see the Index beginning on page 296 of this catalog to find the location of more specific subject matter than is listed in this contents.)
The
GRADUATE SCHOOL
Joseph N. Benoit, Dean

MISSION

The Graduate School has responsibility for all graduate work at the University. It is the purpose of this school to provide opportunity for advanced study beyond the limits of undergraduate courses, to make available the resources of the University in such combinations as will meet the occupational, intellectual, and cultural needs of qualified post-baccalaureate students, and to encourage original investigation and creative scholarship. The University of North Dakota offers the largest (over 1,700 students) and most diversified (54 programs) graduate school in the region. A number of unique facilities and support resources augment the instructional and research program.

Each year approximately 650 new students enroll for degrees in the Graduate School, and approximately 400 students receive master’s degrees and 50 students receive doctoral degrees. In addition, the Graduate School and the Division of Continuing Education offer an extensive program of off-campus graduate work.

DEGREES GRANTED


GRADUATE PROGRAMS

The University offers work leading to the doctorate in 21 fields. 48 programs offer work leading to the master’s degree. Many combinations of major and minor or cognate work are available for the degrees mentioned above. Thesis and non-thesis programs are available.

For information on graduate courses, prospective students should refer to the departmental statements in other parts of this Catalog and to the Graduate School Section of this Catalog. Courses with 500 series numbers are graduate courses and are normally open only to graduate students. All courses listed in the Graduate School Section of this Catalog carry graduate credit. Courses numbered over 300 in the Undergraduate section of this Catalog may, in certain instances, be included in a cognate area.

For a listing of the fields in which graduate degrees may be obtained, see the table below.

ADDITIONAL INFORMATION

For detailed information students should consult the Graduate School Section of this Catalog or go to the Graduate School website at www.und.edu/dept/grad. Address inquiries to the Dean of the Graduate School, Box 8178, University of North Dakota, Grand Forks, ND 58202; Telephone (701) 777-2784 or 1-800-CALL-UND.

GRADUATE PROGRAMS AND DEGREES

<table>
<thead>
<tr>
<th>Program</th>
<th>Degrees Available</th>
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</thead>
<tbody>
<tr>
<td>Anatomy and Cell Biology</td>
<td>M.S., Ph.D.</td>
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<tr>
<td>Art (See Visual Arts)</td>
<td></td>
</tr>
<tr>
<td>Atmospheric Sciences</td>
<td>M.S.</td>
</tr>
<tr>
<td>Aviation</td>
<td>M.S., Ph.D.</td>
</tr>
<tr>
<td>Biochemistry and Molecular Biology</td>
<td>M.S., Ph.D.</td>
</tr>
<tr>
<td>Biology</td>
<td></td>
</tr>
<tr>
<td>Business Administration</td>
<td>M.B.A.</td>
</tr>
<tr>
<td>Career and Technical Education</td>
<td>M.S., M.Eng.</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>M.S., M.Eng, M.ED.</td>
</tr>
<tr>
<td>Chemistry</td>
<td>M.S., Ph.D.</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>M.Eng., M.S., M.ED.</td>
</tr>
<tr>
<td>Clinical Laboratory Science</td>
<td>M.S.</td>
</tr>
<tr>
<td>Communication</td>
<td>M.A., Ph.D.</td>
</tr>
<tr>
<td>Communication Sciences &amp; Disorders</td>
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<tr>
<td>Computer Science</td>
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<tr>
<td>Counseling</td>
<td>M.A.</td>
</tr>
<tr>
<td>Counseling Psychology</td>
<td>Ph.D.</td>
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<tr>
<td>Criminal Justice</td>
<td>Ph.D.</td>
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<tr>
<td>Early Childhood Education</td>
<td>M.S., M.Ed.</td>
</tr>
<tr>
<td>Earth System Science and Policy</td>
<td>M.S., M.ED., Ph.D.</td>
</tr>
<tr>
<td>Education -General Studies</td>
<td>M.S.</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>Ed.D., Ph.D.</td>
</tr>
<tr>
<td>Elementary Education</td>
<td>M.S., M.Eng.</td>
</tr>
<tr>
<td>Engineering</td>
<td>M.S., M.Ed.</td>
</tr>
<tr>
<td>English Language and Literature</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>Environmental Engineering</td>
<td>M.S., M.Eng.</td>
</tr>
<tr>
<td>Geography</td>
<td>M.A., M.S.</td>
</tr>
<tr>
<td>Geology</td>
<td>M.A., M.S., Ph.D.</td>
</tr>
<tr>
<td>History</td>
<td>M.A., D.A., Ph.D.</td>
</tr>
<tr>
<td>Industrial Technology</td>
<td>M.S.</td>
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<tr>
<td>Instructional Design and Technology</td>
<td>M.S., M.Ed.</td>
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<tr>
<td>Kinesiology</td>
<td>M.S.</td>
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<tr>
<td>Linguistics</td>
<td>M.A.</td>
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<tr>
<td>Mathematics</td>
<td>M.S., M.Ed.</td>
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<tr>
<td>Mechanical Engineering</td>
<td>M.S., M.Eng.</td>
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<tr>
<td>Microbiology and Immunology</td>
<td>M.S., Ph.D.</td>
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<tr>
<td>Music</td>
<td>M.M.</td>
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<tr>
<td>Nursing</td>
<td>M.S., Ph.D.</td>
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<tr>
<td>Occupational Therapy</td>
<td>M.O.T.</td>
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<tr>
<td>Pharmacology, Physiology and Therapeutics</td>
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<tr>
<td>Physical Therapy</td>
<td>D.P.T.</td>
</tr>
<tr>
<td>Physician Assistant Studies</td>
<td>M.P.A.S.</td>
</tr>
<tr>
<td>Physics</td>
<td>M.S., Ph.D.</td>
</tr>
<tr>
<td>Psychology</td>
<td>M.A., Ph.D.</td>
</tr>
<tr>
<td>Public Administration</td>
<td>M.P.A.</td>
</tr>
<tr>
<td>Reading Education</td>
<td>M.S., M.Ed.</td>
</tr>
<tr>
<td>Secondary Education (see Education-General Studies)</td>
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<tr>
<td>Social Work</td>
<td>M.S.W.</td>
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<tr>
<td>Sociology</td>
<td>M.A.</td>
</tr>
<tr>
<td>Space Studies</td>
<td>M.S.</td>
</tr>
<tr>
<td>Special Education</td>
<td>M.S., M.Ed.</td>
</tr>
<tr>
<td>Speech-Language Pathology</td>
<td>M.Ed., Ph.D.</td>
</tr>
<tr>
<td>Teaching and Learning</td>
<td></td>
</tr>
<tr>
<td>Theatre Arts</td>
<td>M.A.</td>
</tr>
<tr>
<td>Visual Arts</td>
<td>M.F.A.</td>
</tr>
</tbody>
</table>

1 Non-thesis option is available.
2 Non-thesis degree only.
The Graduate School

STUDENT RESPONSIBILITY

IT IS THE RESPONSIBILITY OF THE STUDENT TO BECOME INFORMED AND TO OBSERVE ALL REGULATIONS AND PROCEDURES REQUIRED BY THE UNIVERSITY, THE GRADUATE CATALOG AND THE PROGRAM THE STUDENT IS PURSUING. The student is responsible for reading the Graduate Catalog, all contracts for employment, the terms and conditions of any awards and correspondence from the various offices of the University. Each student who intends to present a thesis or dissertation in completion of a degree must acquire and read the guide to writing a thesis or dissertation. The student is responsible for ascertaining his or her academic standing and grade-point average. While the Graduate School attempts to notify students regarding any problems in the student’s progress toward a degree, the student alone is responsible for maintaining satisfactory academic standing and progress.

IGNORANCE OF A RULE DOES NOT CONSTITUTE A BASIS FOR WAiving THAT RULE.

THE GRADUATE SCHOOL

The Graduate School provides qualified post-baccalaureate students with the opportunity for advanced study toward a graduate degree. The Graduate School promotes excellence in scholarship and creativity, and encourages original research and competency in technical and professional fields. It is responsible for general supervision of all graduate activity in the departments, schools, and colleges of the University.

The majority of the graduate courses are offered on the Grand Forks campus; however, each semester some graduate courses are offered off campus under the joint supervision of the Graduate School and the Division of Continuing Education. A number of degree programs are offered throughout the state of North Dakota.

The first master’s degree was awarded in 1895, and the first Ph.D. was awarded in 1914. In 2002, 425 master’s degrees, 1 specialist diploma, and 48 doctorates were awarded. There have been 15,056 master’s degrees, 88 specialist diplomas, and 1862 doctoral degrees awarded by the University.

The Graduate School is a member of the Midwest Association of Graduate Schools and the Western Association of Graduate Schools. It is one of the one hundred charter members of the Council of Graduate Schools in the United States.

The Dean is the chief administrative officer of the Graduate School. Graduate School policy is set by the Graduate Faculty which is made up of the President, the Vice President for Academic Affairs, the Dean of the Graduate School, and members of the University faculty who have been approved for membership on the Graduate Faculty. Approximately 472 faculty are members of the Graduate Faculty.

The Graduate Committee is the executive body of the Graduate Faculty. It is composed of the Graduate Dean, the Assistant Dean, thirteen faculty members that are elected by the Graduate Faculty from academic areas that are agreed upon by departmental representation, and one student member. The Committee formulates Graduate School policy, monitors program development on behalf of the Graduate Faculty, and serves as an appeal board for student petitions. Only members of the Graduate Faculty normally may serve on Faculty Advisory Committees and serve as advisors for graduate students.

THE GRADUATE COMMITTEE

Joseph N. Benoit, Ph.D. (ex-officio)
Cynthia Shabb, (ex-officio)
Kimberly Porter, Ph.D., Humanities, 2001-2003
Kathleen McLennan, Ph.D., Fine Arts, 2000-2003
Forrest Ames, Ph.D., Engineering, 2001-2004
Thomas Gilsdorf, Ph.D., Natural Sciences, 2001-2004
Kenneth Hanson, J.D., Business, 2002-2004
Donald Daughtry, Ph.D., Human Development, 2002-2004
Kenneth Ruit, Ph.D., Basic Medical Sciences, 2002-2004
Paul Toddunter, Ph.D., Social Sciences, 2000-2003
Robert Andres, Ph.D., Aerospace Sciences, 2002-2005
Richard Shafer, Ph.D., Speech and Language, 2002-2005
Glenda Lindseth, Ph.D., Nursing, 2002-2005
Renee Mabey, Ph.D., Allied Health, 2002-2005
Chris Stoner, Student Representative, 2002-2003

RESEARCH AND SCHOLARSHIP AT UND

The faculty at the University of North Dakota are committed to the development of new knowledge and technology through research, scholarships, and creative activities. Large numbers of high quality creative efforts include publications, presentations, books, exhibitions, and contracts and peer reviewed grants and contracts.

The Graduate School supports research with Summer Research Professorships, which allow faculty to work with their students on research, and Summer Doctoral Fellowships, which allow Ph.D. candidates to spend full time on their research during the summer.

The University operates a variety of research centers such as the Energy and Environmental Research Center (EERC), the Bureau of Business and Economic Research, the Bureau of Governmental Affairs, the Bureau of Educational Services, the Center for Innovation, the Institute for Remote Sensing, the Social Science Research Institute, and the Engineering Experiment Station. The University also works closely with the North Dakota State Geological Survey and with the U.S. Department of Agriculture Human Nutrition Research Center, located adjacent to the campus.

The University received $54.7 million in fiscal year 2002 in extramural support for sponsored research and educational programs.

ASSESSMENT

As an institution of higher education, the university is committed to ongoing assessment of student learning at all levels and in all programs. Assessment of student learning is essential in order for the university to improve educational programs and the experiences of students. Students are urged to respond when asked to participate in assessment activities. Students are also encouraged to collaborate in the planning and development of assessment activities and to make suggestions for improvements.
Admission

APPLICATION

Those who have earned or will earn a four-year bachelor’s degree at a regionally accredited college or university in the United States, or the equivalent of this degree in another country, will be considered for admission to the Graduate School at UND.

Applicants may apply for admission to the University of North Dakota during their final year of undergraduate study, but must furnish proof of graduation before registration.

The University of North Dakota would be pleased to receive your application for graduate study. Please address your request to:

Graduate School Admissions
University of North Dakota
P.O. Box 8178
Grand Forks, ND 58202-8178
Phone (701) 777-2947
FAX (701) 777-3619
E-mail: gradschool@mail.und.nodak.edu
Worldwide Web: http://www.und.edu/dept/grad/

APPLICATION DEADLINES

The University of North Dakota maintains flexible deadlines for most graduate programs; however, applicants are encouraged to apply as early as possible to assure admission and full consideration for financial aid. The following programs observe specific application deadlines.

- Biology / February 15
- Counseling / February 1
- Counseling Psychology / January 10
- English / March 1
- Nursing-Anesthesia / December 15, 2003
- Nursing-Family Nurse Practitioner / January 15
- Nursing-Doctoral / September 15
- Psychology (all specialties) / January 15
- Social Work / January 10 (Full-Time Program)
- Speech-Language Pathology / February 15

NOTE: It is strongly recommended that you submit and complete your application at least two weeks prior to the departmental deadlines.

MINIMUM GENERAL ADMISSION REQUIREMENTS

1. A four-year bachelor’s degree from a recognized college or university (for U.S. degrees, accreditation by one of the six regional accrediting associations: MSA, NASC, NCA, NEASC-CHE, SACS-CC, or WACS-St.). For combined degree programs refer to the admission requirements under each department.

2. A minimum of 20 semester credits of appropriate undergraduate work in the chosen field.

3. A cumulative Grade Point Average (GPA) of at least 2.75 for all undergraduate work or a GPA of at least 3.00 for the junior and senior years of undergraduate work (based on a = 4.00). *(For applicants having the equivalent of one or more years of baccalaureate work reported on a non-graded system, submission of (a) an evaluation of the work and (b) Graduate Record Examination scores on the General Test and the Subject Test, if offered in the discipline.)

4. A minimum TOEFL (Test of English as a Foreign Language) score of 550 on the paper based test or 213 on the computer based test for all applicants whose native language is not English. Applicants who have received a bachelor’s degree or higher from the United States or English-speaking Canada are not required to submit the TOEFL.

5. Completion of all departmental admission requirements (see the section entitled, “Departmental Programs.”)

*R = Exception - Master of Engineering Program requires an overall GPA of 2.50.

REQUIREMENTS FOR ADMISSION TO SPECIALIST OR DOCTORAL PROGRAMS

1. All general admission requirements listed above.

2. A master’s degree from an accredited institution normally in the field of proposed specialist or doctoral study.

Note: With the approval of the University Graduate Committee, some departments permit admission to the doctoral program with a bachelor’s degree. See the departmental section for the specific requirements which may be in addition to the Minimum General Requirements listed above.

3. A Grade Point Average of 3.00 or above in all graduate level work.

4. Completion of all departmental requirements.

Students who do not meet all of the above requirements for admission may be considered for PROVISIONAL admission or for QUALIFIED admission.

Students who meet all of the stated admission requirements are eligible for consideration for Approved status admission, but are not guaranteed admission. The entering classes will be chosen from all qualified applicants on the basis of the quality of applicants’ previous work and the adequacy of their preparation for graduate study at UND. The Graduate School reserves the right to refuse admission to any applicant on the basis of scholastic or other reasons.

INTERNATIONAL STUDENTS

It is strongly recommended that the application be completed three months prior to the term in which the applicant wishes to matriculate.

All applicants whose native language is not English are required to demonstrate English language proficiency by taking the TOEFL (Test of English as a Foreign Language) and achieving a minimum score of 550 for the paper based test or 213 for the computer based test. Applicants who have received a bachelor’s degree or higher from the United States or English-speaking Canada are not required to submit the TOEFL.

Graduate assistantships are generally unavailable to international students during their first year of study. However, an applicant with an outstanding record may be considered only if he or she has first taken the Test of Spoken English or the SPEAK test and achieves a minimum score of 50.

International students are required to submit a certification of finances to the Graduate School after an offer of admission has been made. Approximately $23,000 annually is required for educational and living expenses.
Applicants admitted to a graduate program will be issued an I-20 Form after all required documentation has been submitted.

APPLICATION PROCEDURE

Those who wish to be considered for graduate study are required to submit an application and supporting materials to the Graduate School. All applicants are required to submit the following:

1) Application Form; 2) Application Fee; 3) Three letters of recommendation; 4) Two official copies of all academic transcripts; and 5) Statement of Purpose.

Certain graduate programs require additional materials as part of their application process, i.e., writing samples, test scores, portfolios, etc. You should contact the department or the Graduate School for more specifics.

An applicant who has been admitted to the Graduate School may delay his/her term to enter for one semester only. After this point, the applicant will be required to submit a new application packet and be re-evaluated for admission.

CATEGORIES OF ADMISSION

Degree Status

Applicants for degree programs may be admitted to Approved, Qualified, or Provisional Status. The Graduate School has established minimal criteria for acceptance. Individual departments may have additional requirements.

Approved Status

Students who have met the minimum admission requirements stipulated by the Graduate School and have met all departmental requirements for admission are granted admission to Approved Status. Admission to this status implies only that a student is permitted to commence graduate work which normally will lead to a degree or diploma. However, admission to Approved Status does not guarantee that a student will be allowed to become a candidate for a degree or diploma.

Qualified Status

Admission to Qualified Status may be granted to applicants who have met all requirements except for prerequisite coursework which must be completed prior to advancement to candidacy. Upon completion of the conditions of acceptance, and provided the student has earned a GPA of at least 3.00 for all work attempted, he/she is eligible to be advanced to Approved Status.

Provisional Status

Admission to Provisional Status may be granted to an applicant who has not met one or more of the admission requirements (e.g., low G.P.A., low test scores, or inadequate writing skills). The first obligation of students admitted to Provisional Status will be to meet all of the conditions specified at the time of admission. Students admitted to Provisional Status because of their previous GPA will be eligible for advancement to Approved Status after the completion of 12 semester hours of work if their GPA for all work attempted is at least 3.00.

Students in a Provisional Status may be dismissed after one registration if their GPA is below 3.00, or if they have failed to meet other specified conditions.

Non-Degree Status

Applicants who want to take graduate classes but who do not want to earn a degree are classified as Non-Degree students. All applicants must possess a four-year bachelor’s degree earned at an accredited U.S. institution (or equivalent degree from another country).

Subject to the approval of the department and the Dean of the Graduate School, a maximum of nine (9) semester credits taken as a graduate Non-Degree student may subsequently be counted toward a graduate degree subject to all other regulations.

Deferred Admission Status

This status is reserved for applicants who intend to pursue a degree program and who are allowed to register in the Graduate School while a formal application for admission is completed and processed and eligibility determined. Work taken in this status will not count toward a graduate degree at UND unless admission to a graduate program is secured. A Deferred Student who fails to gain admission to a graduate program by the next registration period will be reconsidered to be in Non-Degree status. The status of those who are admitted will be converted to degree status retroactively. Students who have previously been Non-Degree Students are not eligible for Deferred Admission status.

Post-Baccalaureate Status

The purpose of this status is to provide a procedure for individuals to take a limited amount of academic work for cultural, intellectual, and continuing education needs. A student registered in Post-Baccalaureate status may not change to another status until the completion of the term. All work taken will be graded on the Satisfactory- Unsatisfactory system and cannot be applied to any graduate degree program at the University of North Dakota.

(Any student who has been dismissed as a Degree, Deferred admission, or Non-Degree student is eligible to register in the Graduate School only as a Post-Baccalaureate student.)

Transient Status

Transient students are those who are pursuing a graduate program at another university but who wish to enroll for a semester or summer session with the intent of returning to their home institutions. If aTransient student elects to remain at the University of North Dakota to work toward a graduate degree, formal application for admission to a degree program will be required. Subsequently, if admitted, the student may ask the Advisory Committee to accept courses taken while in Transient Status to a degree program.

NOTE: All students taking courses in the Graduate School must maintain a 3.00 Grade Point Average. The academic standing of all graduate students, including those who are Non-Degree, Deferred, or Transient Status whose cumulative Grade Point Average falls below a 3.00 (2.75 for Master of Engineering program) will be reviewed at the end of each academic term by the graduate dean. Students having accumulated 12 or more credit hours will be placed on academic probation for one semester; students having accumulated fewer than 12 credit hours will be placed on academic probation until either (a) the GPA is raised to at least 3.00 (2.75 for M.Engr.) or (b) 12 graduate credit hours are accumulated, whichever occurs first. If, at the end of the probationary period, the GPA is still less than 3.00 (2.75 for M.Engr.), the student will be dismissed.
Academic Policies

REGISTRATION

NOTE: Students attending North Dakota colleges and universities must prove immunization against measles, mumps, and rubella. This policy includes students taking courses offered for credit, non-credit, or audit. Forms to prove compliance are available at the UND Student Health Service, University of North Dakota, P. O. Box 9038, Grand Forks, ND 58203-9038, phone (701) 777-3963.

Any student who holds a baccalaureate degree and has established status as a Degree, Non-Degree, Deferred Admission, Post-Baccalaureate, or Transient student is eligible to enroll in a graduate course, i.e., a course numbered 500 or higher. Enrollment in certain courses may be limited to Degree students, however. Registration and fee payment procedures are outlined by the Office of the Registrar and published in the Time Schedule. Registration is complete only upon payment of tuition and fees. Registration may be cancelled by the Bursar if tuition and fees are not paid.

It is strongly recommended that students consult their advisor before registering and check departmental and program policies on advisement.

Only work taken as a registered Graduate Student may be credited toward a graduate degree. Students classified as Seniors may be granted graduate credit if they meet the criteria defined in the policy.

The number of credits for which a student may register is subject to certain limits. Registrations not in compliance with University, Graduate School, and departmental policies are subject to cancellation by the dean’s office.

Common Course Numbers

Course numbers for certain activities are uniform throughout the Graduate School and are not listed separately for each department:

- Continuing Enrollment, 1-12 credits................................. 996
- Independent Study Report, 2 credits................................. 997
- Thesis, 4-5 credits .................................................................. 998
- Dissertation, typically 6-18 credits................................. 999

CONTINUING ENROLLMENT - 996

Students who previously have registered for all of the necessary credits of coursework, research, Independent Study (997), Thesis (998), or Dissertation (999) on their approved Program of Study, but who have not completed their independent study, thesis, or dissertation, must register for 996 Continuing Enrollment each additional semester or summer session they are utilizing university facilities or the time of the faculty, i.e., laboratories, libraries, examinations, advisement, etc. The number of credits should be determined by the advisor to reflect the proportion of time devoted by the student to academic study that term, with a full-time student registering for 12 credits. Advisor verification of the appropriateness of the number of 996 credits may be required.

After two separate semesters of 6 to 12 hours in 996 for master’s students and after four separate semesters for doctoral students, a student wishing to enroll in additional 996 hours will be required to petition the Graduate School dean.

Continuing enrollment (996) credits will not count toward the requirements for the degree. All students must be enrolled for either 996 credits or other credits the semester of graduation. Students may register for both regular credits and 996 credits in a given term if all other conditions have been met.

MINORS AND COGNATES

Some degree programs require or permit academic work outside of the area of concentration (major) in a supporting area which may be called a minor area or a cognate area and must consist of at least nine credit hours.

A minor is a concentrated study in a specific supporting field at the graduate level. A minor must be titled and identified on the student’s program of study and be approved by a Graduate Faculty member of the minor department/program. The minor will be listed on the student’s transcript. Only the courses approved for graduate credit may be included in a minor.

A cognate is a selection of courses providing broad support to the major. All courses number 300 or above listed in this catalog, including those offered by departments or fields that do not offer graduate courses or graduate degrees, may be included in the cognate. Courses should be taken in two or three departments of fields. A cognate area will not be titled and will not be listed on a student’s manuscript.

NOTE: When a graduate student elects to use a 300- or 400-level course for graduate credit, it is understood that the student will be required to do additional work, over and above that typically required of undergraduates. Usually, such work is of an independent nature.

GRADUATE COOPERATIVE EDUCATION

Some departments offer Graduate Cooperative Education. The course must meet the following minimum requirements set by the Graduate Committee:

- The student must be in Approved status and in good academic standing (minimum 3.00 GPA).
- The student must have completed a minimum of 9 credits of the Program of Study.
- The student must have the approval of the department, i.e., department chair or graduate director, and of his/her advisor before the co-op begins.
- Proper work experience on campus may be acceptable, but not employment in the department granting the co-op credit.
- Credit will not be allowed for current career track positions.
- Typically, no more than 20% of the Program of Study will be allowed for co-op credit.
- The student will be required to present a seminar and submit a written report.
- The co-op experience must be compensated.

The Department’s requirements for registration in Graduate Cooperative Education may be more stringent than the minimums set by the Graduate Committee.

CERTIFICATE PROGRAMS

Some graduate programs offer certificate programs in addition to the degree programs. Certificate programs generally require a minimum of nine credit hours of coursework in approved graduate courses which are transferable to a graduate program. A minimum grade of C in each course is required to earn credit and the certificate.

Admission to the certificate program may be different from admission to a degree program. Please consult the department for specific requirements.
GRADUATE CREDIT

- Graduate credit may be earned only by students enrolled in the Graduate School and in courses listed in the Graduate section of the catalog.
- UND seniors who have obtained special permission may also receive graduate credit for graduate courses.
- All courses listed in the “Departmental Program” section carry graduate credit and are eligible for use in the major or minor of any Program of Study for a graduate degree, subject to the approval of an advisor or Faculty Advisory Committee and the dean.
- All UND courses numbered 300 and above may be applied to the cognate part of a Program of Study. (When a graduate student elects to use a 300- or 400-level course for graduate credit, it is understood that the student will be required to do additional work over and above that required of undergraduates. Usually, such work is of an independent nature.)
- At least one-half of the credits for all degrees must be in courses numbered 500 or higher.
- Graduate courses used for credit for one degree at UND may not be used for credit toward a second UND graduate degree.

ELIGIBILITY TO WORK FOR AN ADVANCED DEGREE

Only those who have been officially admitted to the Graduate School as Degree Students on the basis of a letter from the dean may work for an advanced degree.

ELIGIBILITY OF FACULTY TO PURSUE GRADUATE DEGREE

A UND faculty member above the rank of instructor may be admitted to and enrolled in a graduate degree program at this University two years after the date of termination as a faculty member. In those instances where there is clearly no potential for serious conflict of roles or interests, the two-year interval may be waived by the University Graduate Committee upon the recommendation of the department to which admission is sought. This policy does not apply to members of the Department of Military Science.

PETITIONS AND APPEALS

Students who wish to be excused from Graduate School requirements must petition the dean of the Graduate School on a form available from the Graduate School and on the Graduate School website at: http://www.und.edu/dept/grad/. The forms require the written endorsement of the advisor, instructor (if appropriate), and department chairperson.

Graduate Students or members of the Graduate Faculty may appeal decisions of the dean to the Graduate Committee.

ACADEMIC GRIEVANCE

An “academic grievance” is a statement expressing a complaint, resentment, or accusation lodged by a student about an academic circumstance (such as grading, testing, quality of instruction) which is thought by the student to be unfair.

Academic issues subject to grievance procedures differ from those subject to the academic petition process. If a student thinks that a petition has not been handled fairly, the student may initiate a grievance based upon unfair treatment, but not upon the substantive issue of the petition. The grievance process available to graduate students depends on the issue as follows:

1. Grades
   An academic grievance involving the work in a course by a graduate student shall be resolved by the process prescribed by the college in which the course is offered. The process must commence with a discussion between the student and the instructor.

2. Other Issues (involving Graduate School policies and procedures)
   Resolution of all other grievances by graduate students shall commence by discussion between the student and the party against whom the grievance is lodged. In the absence of resolution by such discussion, the grievance may be advanced by either party beginning at the next level and continuing as necessary through the persons/units/committees in the following sequence:
   a. Advisor or Advisory Committee
   b. The person assigned administrative responsibility for the graduate program in which the student is a major, i.e., the director of graduate study or, in the absence of such a position, the department chairperson
   c. The dean of the Graduate School
   d. The Graduate Committee (as described in the Graduate School Constitution)
   e. The Student Academic Standards Committee

Grievances must be submitted in writing when advanced beyond the first discussion. Similarly, responses to such advanced grievances must be in writing. Responses by the parties described in items 2 a., b., and c. shall be within ten class days of their receipt; response by the Graduate Committee shall be within a reasonable period of time consistent with its meeting schedule.

WITHDRAWAL FROM THE UNIVERSITY

A student wishing to withdraw from the University before the end of a semester must begin the withdrawal process by submitting a completed withdrawal form to the Office of the Registrar. Failure to do so will result in a grade of F in all classes and no refund of fees.

If a student would like to completely withdraw from a degree program, he or she should complete a Graduate School Withdrawal Form available from the Graduate School.

GRADUATE WORK BY UNDERGRADUATES

Graduate courses normally are open only to graduate students. An undergraduate senior at UND may enroll in graduate courses (500-level) for undergraduate credit. A student below the standing of a senior must have the permission of the instructor and graduate dean to take a graduate course.

A senior may be granted graduate credit for the courses listed in this section of the catalog if the student:

1. the credits sought will not be used to complete requirements for the baccalaureate degree;
2. secures the prior approval of the dean of the Graduate School on a form available from the Graduate School and does so no later than the last day to add a course;
3. is within twelve credits of the baccalaureate degree;
4. completes the degree requirements in the current semester;
5. has an overall GPA of at least 3.00;
6. is carrying a total academic load of no more than 16 credits during a semester or 8 credits during the summer session;
7. is not taking the courses for S/U credit;
NOTE: The 300- or 400-level courses listed in this section of the catalog were approved by the Graduate Committee for graduate credit on the basis that the student be required to do additional work, generally of an independent nature.

MAXIMUM AND MINIMUM ACADEMIC LOADS

A full course load for a graduate student is twelve credit hours in a semester or nine credit hours in a summer session. A graduate student may carry no more than sixteen credit hours per semester or 9 credits in a summer session. Graduate research assistants whose research is part of their degree requirement must carry at least 12 credits each semester or 6 credits in a summer session. Graduate teaching or service assistants and some graduate research assistants must enroll in the following number of credits:

<table>
<thead>
<tr>
<th>Graduate Appointment</th>
<th>1/2 Time (minimum-maximum)</th>
<th>1/4 Time (minimum-maximum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester (16 weeks)</td>
<td>6-10</td>
<td>8-12</td>
</tr>
<tr>
<td>Summer (8 weeks)</td>
<td>3-5</td>
<td>4-6</td>
</tr>
</tbody>
</table>

GRADING SYSTEM

A graduate student will be allowed credit for a course only when a grade for the course has been reported to the Office of the Registrar. Grades awarded in all courses are indicative of the quality of the work done. Their significance is as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Honor Point Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>(Superior)</td>
</tr>
<tr>
<td>B</td>
<td>(Excellent)</td>
</tr>
<tr>
<td>C</td>
<td>(Acceptable)</td>
</tr>
<tr>
<td>D</td>
<td>(Passing, but no graduate credit awarded)</td>
</tr>
<tr>
<td>F</td>
<td>Failure</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
</tr>
<tr>
<td>S</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>U</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawn</td>
</tr>
</tbody>
</table>

GRADUATE GRADE POINT AVERAGE

A graduate student’s cumulative GPA is based on all coursework, graduate or undergraduate, taken while the student is registered in the UND Graduate School.

Grades of less than C are not included in the number of credits accepted for a graduate degree, but they are counted in determining the cumulative GPA. Credits and grades for courses accepted in transfer, or courses graded on a Satisfactory-Unsatisfactory basis are not counted in determining the GPA. Courses with grades of Incomplete are neither counted as partial fulfillment of degree requirements nor calculated in the GPA.

SATISFACTORY-UNSATISFACTORY GRADING

Some seminars, research, thesis, dissertation, and field work may be graded on a Satisfactory-Unsatisfactory basis. Those courses usually are marked in the Timetable of classes, and the entire registration for the course will be graded on the S-U basis. The student does not have the option of receiving a grade. Graduate students do not have the option of electing S-U grading in either graduate or undergraduate courses.

INCOMPLETE GRADES

It is expected that students will complete all requirements for a course during the time frame of the course. For reasons beyond a student’s control, and upon request by the student or on behalf of the student, an incomplete grade may be assigned by the instructor when there is reasonable certainty the student will successfully complete the course without retaking it. The mark “I,” Incomplete, will be assigned only to the student who has been in attendance and has done satisfactory work up to a time within four weeks of the close of the semester, including the examination period. A grade of incomplete is not assigned to those whose work is incomplete for reasons satisfactory to his or her instructor. Incompletes are entered on the final grade sheet. Incomplete grades convert to grades of “F” if a grade change is not submitted by the instructor within two calendar months after the month in which the course ends after the next semester of the regular academic year (fall or spring semester) or by an earlier date specified on the incomplete form by the instructor. An incomplete may be extended for up to 12 calendar months by submitting a petition to the Office of the Registrar with the approval of the instructor of the course and the dean of the Graduate School. An incomplete grade must be changed by 12 calendar months from the ending date of the class. An “I” may be converted as indicated above but cannot be expunged from the record. Students may not register in courses in which they currently hold grades of incomplete, except for courses that allow repeated enrollment. A student will not be allowed to graduate with an unconverted incomplete grade on the academic record.

IN PROGRESS GRADES

The Graduate School or the Honors Program may assign a grade of “SP,” Satisfactory Progress, or “UP,” Unsatisfactory Progress, to Honors Thesis (489), Thesis (998), Dissertation (999), Independent Study (997), Research Design (Engineering 595), English 591, Professional Exhibition (VA 599), or Research (leading to the thesis or dissertation). The “SP” or the “UP” grade for these activities, which usually span several sessions, need not be replaced until the conclusion of the activity, usually a student’s final semester. Grades of “SP” or “UP” are not calculated into term or cumulative GPA values and will be expunged from the record upon submission of final grades for the course. Students failing to show satisfactory progress may face dismissal.

GRADE CHANGES

Submitted grades, except for grades of incomplete, are final and may only be changed to correct an error. Grades may not be changed by additional work or submitting additional materials. Students should report any error to their instructor within 90 days of receipt of the grade. The instructor must file a change of grade form to the Registrar signed by the instructor, the department chair, and the dean of the course. Reasons for the change must be fully explained and justified.

REPETITION OF COURSES

All courses taken by graduate students, for which a grade of D, F, or U was received, may be repeated once for credit, with only the second grade to count in the grade point average. This option does not apply to a student who has been dismissed. Courses with grades of C or better may not be repeated without the written approval of the Dean of the Graduate School.

ACADEMIC STANDARDS

A cumulative grade point average (GPA) of at least 3.00 for all work taken as a graduate student, i.e., while registered in the UND Graduate School, must be maintained in order to remain in satisfactory academic standing in the Graduate School; however, mere maintenance of a 3.00 GPA or better may not be considered adequate satisfactory performance. Satisfactory performance may include, but is not limited to, satisfactory research performance, a satisfactory GPA in the major, satisfactory performance in examinations, such as the comprehensive examination, or satisfactory performance in other specific program requirements.
The academic standing and progress of Degree Students will be reviewed by the departments and Faculty Advisory Committee periodically to ensure that appropriate progress is being made toward the degree. Students may be placed on probation with conditions or dismissed as a result of unsatisfactory academic performance or progress. Dismissal will be noted on the student’s transcript.

The conditions regarding Grade Point Average are as follows:

1. No decision on dismissal will be reached until a minimum of 12 graduate credits has been accumulated.
2. The academic standing of all graduate students whose cumulative GPA falls below 3.00 (2.75 for Master of Engineering program) will be reviewed at the end of each academic term by the graduate dean. Students having accumulated 12 or more credit hours will be placed on academic probation for one semester; students having accumulated fewer than 12 credit hours will be placed on academic probation until either (a) the GPA is raised to at least 3.00 (2.75 for M.Eng.) or (b) 12 graduate credit hours are accumulated, whichever occurs first. If, at the end of the probationary period, the GPA is still less than 3.00 (2.75 for M.Eng.), the student will be dismissed.

TRANSFER OF GRADUATE CREDITS

A limited amount of graduate work completed at a regionally accredited North American institution prior to, or after matriculation in the Graduate School at UND, may be applied toward a graduate degree at the University of North Dakota. Graduate work is considered for transfer only on an individual basis and only after the student has completed satisfactory work in residence at UND. Those transfer credits approved by the student’s advisory committee and the dean of the Graduate School are included in the program of study for the UND graduate degree and only those transfer credits will be recorded on the UND transcript.

The basic purpose of the transfer policies is to ensure that transferred work is of comparable content, level, timeliness, and quality to that which would be taken at UND and included on the program of study for the degree. The following policies are generally applicable to the acceptance of the graduate work for transfer to UND:

- The work must have been taken at an accredited North American institution.
- The student must have been enrolled as a Graduate Student.
- The work must have received graduate credit at the institution where it was earned.
- The student must have earned a grade of B or better.
- The work must be less than seven years old at the time the UND degree is awarded with the exception of work that was part of a completed prerequisite degree.
- The amount of transfer credit that will be accepted toward the master’s degree is one-fourth (usually eight semester credits) of the credit hours required for the degree.
- The work credited toward a completed master’s degree may be accepted for a specialist’s diploma or doctoral degree.
- Work beyond the master’s degree must be post-master’s level and from an institution that offers post-master’s degrees in the discipline.
- Work beyond the master’s degree from an institution offering only master’s level work in the discipline may be applied to the minor or cognate areas.
- For the Ph.D., only 30 credits may be transferred beyond the credits allowed for the master’s degree, i.e., a total of 60 credits.
- For the Specialist Diploma, only 15 credit hours will be transferred beyond the credits allowed for the master’s degree, i.e., a total of 45 credit hours.

RESIDENCE REQUIREMENTS

Some graduate degree programs, especially those with a significant research/creative component, require that students spend a minimum period of time in residence during their course of study. The purpose of residence is to provide an opportunity for sustained and concentrated intellectual effort, to provide for immersion in a research environment, and to permit extensive interaction with fellow students and faculty of the major department.

In order to meet a residence requirement, a student (a) must devote full time to academic study and (b) must be registered for at least twelve credits in a semester or six credits in a summer session, or be a graduate teaching or research assistant.

The Residence Requirements are stipulated for each graduate degree program in this catalog. A year of residence requires four consecutive semesters of residence. Two years of residence requires four consecutive semesters of residence or three semesters and two summer sessions, all without interruption.

Off-campus graduate courses offered by the University of North Dakota through the Division of Continuing Education do not carry credit toward meeting the residence requirement.

Any exceptions to the policies stated above must be approved in advance by the student’s advisory committee, the student’s department, and the dean of the Graduate School.

MAXIMUM PERIOD ALLOWED FOR GRADUATE PROGRAMS

Graduate courses more than seven years old are considered obsolete and may not be counted to fulfill course requirement for an advanced degree program. Programs of study more than seven years old also are obsolete.

Obsolete UND graduate courses may be revalidated and may be counted toward an advanced degree on the recommendation of the student’s Faculty Advisory Committee and with the consent of the dean of the Graduate School. In no case will more than one-half a program be accepted for revalidation. Revalidation of an overage graduate course can be approved only if it can be demonstrated that a student’s knowledge of the subject matter of the course is current. Oral and/or written examination on the subject matter of the course normally is required. The prior approval of the dean must be obtained for the proposed revalidation procedure.

Graduate work from another institution which is overage may not be revalidated for a UND graduate degree. Work which was part of a completed prerequisite graduate degree program does not become overage.

RESEARCH ON HUMAN SUBJECTS

The University of North Dakota Policy and Principles on the Use of Human Subjects requires that any biomedical or behavioral research which involves the use of humans as subjects be reviewed and approved by the Institutional Review Board prior to initiation of the project or activity. This policy applies to both faculty and student research. Forms and directions for submission of a project to the Institutional Review Board can be obtained from the Office of Research and Program Development at: http://www.und.edu/dept/orpd/
RESEARCH INVOLVING ANIMALS

The University of North Dakota requires that any research involving vertebrate animals be reviewed and approved by the Institutional Animal Care and Use Committee prior to initiation of the project or activity. This policy applies to both faculty and student research. Forms and directions for submission of a project to the Institutional Review Board can be obtained from the Office of Research and Program Development at: http://www.und.edu/dept/orpd/.

RESEARCH INVOLVING RADIATION

The University of North Dakota Radiation Safety and Hazardous Materials Committee functions to ensure compliance with all federal, state, and University regulations and policies for radioisotope use, radiological materials, radiation producing machines, lasers, and hazardous materials and substances. Research involving such materials must be approved prior to the initiation of the research. Students working with these agents must receive training through the Safety Office or be able to document prior training. Additional information is available through the Office of Research and Program Development at: http://www.und.edu/dept/orpd/.

RESEARCH INVOLVING BIOHAZARDOUS MATERIALS

The University of North Dakota Institutional Biosafety Committee (IBC) requires that any research involving biohazardous research material be subject to a University Review Process and that these activities be approved by the IBC prior to their initiation. The IBC is the only authorized University committee which can give approval to projects and activities involving recombinant DNA and biohazardous research material. The IBC will follow the NIH guidelines for recombinant DNA and biohazardous material research in determining the suitability of projects and activities and will provide an explanation of any decision not to approve a project or activity. Any project or activity not approved can be revised and resubmitted to the IBC for consideration. Additional information is available through the Office of Research and Program Development at http://www.und.edu/dept/orpd/.

INTELLECTUAL PROPERTY

The University of North Dakota has detailed policies regarding intellectual property, patents, and copyrights. Students wishing more information about intellectual property rights are referred to the Office of Research and Program Development at http://www.und.edu/dept/orpd/.

CHALLENGE EXAMINATIONS

Students who believe they are eligible to establish credit for courses because of superior preparation may apply to take challenge examinations. Application should be made on the Graduate School petition form to the instructor of the course and must be approved by the student’s department and the dean of the Graduate School before it may be submitted to the Office of the Registrar. If the application is approved, a committee of that department will administer the examination and will report a grade of either Satisfactory or Unsatisfactory. Challenge examinations will not be permitted for courses which were audited or for courses which were dropped, nor will they be permitted for a student who is not currently enrolled.

CONTINUING EDUCATION

Master and Doctoral Degrees Offered at a Distance

The University of North Dakota, through the division of Continuing Education and Outreach Programs, offers master’s degrees and a Ph.D. degree at a distance to North Dakota citizens as well as to students located throughout the United States and internationally. Many of the degree programs are delivered via the North Dakota Interactive Video Network (IVN) utilizing two-way compressed video and audio. Other delivery methods include video tape coupled with on-campus labs and/or capstone sessions, Internet, and onsite instruction.

Degree programs currently being offered include:

- Master’s Degree in Public Administration delivered from Grand Forks to Bismarck via IVN.
- Master’s Degree in Business Administration delivered from Grand Forks to Bismarck and Dickinson via IVN.
- Master’s Degree in Space Studies offered by Internet and delayed videotape to students throughout the United States and Internationally.
- Master of Education in Educational Leadership delivered from Grand Forks and Fargo (joint program of UND and Tri-College University) to Minot, Williston, Bismarck, and Dickinson via IVN.
- Master of Social Work delivered from Grand Forks to Bismarck via IVN.
- Master of Education in Special Education delivered from Grand Forks to Minot, Fargo, Devils Lake, Dickinson, Williston, Bismarck and Jamestown via IVN.
- Master of Science in Education-General Studies offered on-site in Bismarck and IVN delivered from Grand Forks.
- Master of Science in Elementary Education delivered from Grand Forks to Bismarck via IVN and on-site in Bismarck.
- Ph.D. in Teaching and Learning: Higher Education delivered from Grand Forks to Bismarck via IVN and on-site in Bismarck.

Graduate courses are also offered in the area of Autistic Spectrum Disorders from Grand Forks to students throughout the United States and Internationally via video tape and the Internet. For more information on degree programs and/or courses offered at a distance, please call toll free 877-450-1842 or (701) 777-4883 or visit the web site at: http://www.conted.und.edu.

Workshops

Graduate level workshops are short-term organized learning experiences which provide for active, hands-on participation or for concentrated study on a specialized topic. Registration is limited to persons holding a minimum of a baccalaureate degree, and grading is on the Satisfactory/Unsatisfactory system. Students register as Continuing Education students and do not have to be formally admitted to the Graduate School.

Graduate level workshops are offered by the graduate departments under the course number “900-Graduate Workshop.” For each workshop registration, a transcript entry will be made showing the title, credit, and grade for the workshop.

Since graduate level workshops are not designed for the purpose of being a part of a graduate degree program, their credit normally may not be applied toward graduate degree requirements. The Graduate dean may approve the inclusion if the workshop involves critical review, analyses, discussion, theory, or content similar to graduate courses.

Correspondence Study

Correspondence study work is not accepted for graduate credit. With the consent of the student’s major department, the advisor, and the graduate dean, a student may take work by correspondence to remove deficiencies in the undergraduate background.
CANDIDACY FOR DEGREES

Admission to the Graduate School does not imply admission to candidacy for an advanced degree. The rights to candidacy can be earned only by demonstrating the preparation for and ability to pursue graduate work and by fulfilling requirements prerequisite to candidacy. Those requirements are described in detail for each degree.

Advancement to candidacy does imply that the student has been judged by the advisory committee and the dean to have satisfactorily completed much of the formal coursework and examination requirements and to be fully qualified to pursue the remaining, usually more independent, portion of the degree work.

GRADUATION - APPLICATION FOR DEGREE OR DIPLOMA

Students who expect to receive a degree must file an Application for Graduate Degree in the Graduate School by the deadline noted in the Academic Calendar. All graduate students must have been advanced to Candidacy the semester preceding the semester in which they expect to graduate.

After the student applies for the degree, the Graduate School checks the academic record to ensure that the student is eligible to graduate. A new application must be filed if the student fails to graduate. Students must be registered for the term in which they expect to receive their degree.

Financial Information

(See p. 7-11 for general information on tuition, fees, etc.)

GRADUATE SCHOOL AWARDS

Applications for Graduate Assistantships are accepted throughout the year; however, students are reminded that most appointments are offered by March 15. Students should contact the department for information.

Deadlines for Scholarships and Fellowships are announced each year. Information and applications are available in the Graduate School and in the department.

The following policies are applicable to the award and retention of graduate appointments and awards:

1. Students admitted to the Graduate School and notified that they have been granted an appointment or award before they actually have received a bachelor’s degree may either register nor hold an appointment or award until they have received the bachelor’s degree and fulfilled all requirements for admission to the Graduate School as a degree student.
2. Only Degree students in Approved Status may hold awards or appointments.
3. Assistantship appointments will not exceed one-half time in all combinations.
4. Students must maintain the credit load requirements defined in the appointment letter to retain appointments or awards.
5. Students must maintain a 3.00 GPA (2.75 Master of Engineering) to retain awards or appointments.
6. A student may be removed from an appointment due to unsatisfactory performance.
7. Students in good academic standing, i.e., a GPA of 3.00 or higher are eligible for reappointment.
8. Students who withdraw from or are dismissed from the Graduate School become immediately ineligible for and may not continue to hold an appointment or award.

In accordance with the provisions of federal statutes, it is the policy of the University of North Dakota that no person in the United States shall be discriminated against because of race, creed, handicap, color, sex, age, or national origin in the selection for an award or appointment provided only that the applicant meets the eligibility conditions for an award. Policies and procedures affecting graduate assistantships are described more fully in the Graduate Assistant Handbook.

Graduate assistantship stipends are subject to income tax and tax will be withheld. Tax will not be withheld from scholarships, traineeships, and fellowships, but the stipend may be taxable. Rulings as to the actual taxability of any specific stipend are in the hands of the Internal Revenue Service.

Acceptance of an offer of a graduate scholarship, fellowship, traineeship, or graduate assistantship for the next academic year completes an agreement which both the student and the Graduate School expect to honor. In those instances in which the student indicates acceptance and subsequently desires to change plans, a written resignation of the appointment may be submitted at any time through April 15 in order to accept another scholarship, fellowship, traineeship, or graduate assistantship. However, an acceptance given or left in force after April 15 commits the student to the appointment.

Awards

Chester Fritz Scholarships of $1,000 each are awarded to North Dakota students with an outstanding academic record who are continuing graduate work.

An Alumni Prize of $1,000 is awarded each year to a graduate student who has completed at least one year of graduate work. This prize, which may be granted in addition to other major awards, is in recognition of outstanding academic performance.

K. B. Tiffany Scholarship of $1,000 is awarded, by nomination, to a student pursuing a graduate degree in English. Consult with the English Department.

Bernhardt A. E. Leser Memorial Scholarship is for a graduate student interested in studying abroad. The money is available to any graduate student who enrolls at an institution in Germany, France, or Scandinavia and provides a record of matriculation therefrom.

Neil C. Macdonald Memorial Scholarships of $1,000 are awarded on the basis of promise of high academic achievement and in accord with the ideals and purpose of the University of North Dakota to two graduate students, one of whom should be in History.
The Christopher and Ernestine Kandel Hamre Trust Fellowships are available annually to two terminal year doctoral students in the Department of Anatomy. The fellowships provide a stipend plus the cost of tuition to the student, and will provide cost of education/research funds to the department in support of the student.

The George and Margaret Seaworth Scholarship is for a continuing graduate student interested in the medical or social issues of gerontology. The recipient should be of good character with above average grades.

Tuition Waiver Scholarships provide a waiver of tuition to students who are commencing or continuing work toward a graduate degree. Awards are made on the basis of academic achievement and promise. Tuition waiver scholarships for the Summer Session are available to those who held Graduate Assistantships during the preceding year. Students should contact their department chair/director to be nominated.

Cultural Diversity Tuition Waivers may be available. Applications are available in the Graduate School or on the Graduate School’s web site.

Summer Doctoral Fellowships of $4,000 plus a waiver of tuition for the summer session are available to doctoral students who have an approved Dissertation Proposal on file in the Graduate School and plan to work on their dissertation/research full time during the summer. Applications are due early in the Spring semester and will be evaluated on the basis of an application and recommendations from the advisor and the chairperson.

Assistantships

Graduate Teaching Assistantships are university appointments that provide financial assistance to students qualified for teaching service in the department in which they take the major part of their graduate work. The purpose of these assistantships is to facilitate students working toward their degree while gaining teaching experience in the field of the degree. Assistantships may be for one-fourth or one-half of full-time service. Most assistantships are half-time assistantships which require 15 to 20 hours of work per week and permit the student to carry a minimum of 6 and a maximum of 10 credits of graduate work each semester. A quarter-time assistant requires 7 1/2 to 10 hours per week and must carry 8 to 12 credits per semester.

The tuition is waived by the University. Students are responsible for all other fees. A health insurance plan is also available. Assistantships are available in most departments offering a graduate degree.

International graduate assistants who are non-native speakers of English are required to take the TSE (Test of Spoken English) or the SPEAK test and achieve a score of 50 before an assistantship may be offered.

Graduate Research Assistantships are offered in many of the departments of the University, e.g., sciences, engineering, and education. These appointments usually carry a monthly stipend. The tuition may be waived by the University. Students are responsible for all other fees.

The purpose of research assistantships is to provide degree-seeking students with research experience in their academic disciplines while assisting with an ongoing research project. If the research is included in a student’s program of study for a degree, the student must carry an academic load as a full-time student, i.e., 12-16 credits per semester. If the research is not part of the student’s program, load restrictions apply. A half-time assistant must carry 6-10 credits and a quarter-time assistant must carry 8-12 credits per semester. International graduate assistants who are non-native speakers of English are required to take the TSE (Test of Spoken English or the SPEAK test) and achieve a score of 50 before an assistantship may be offered.

Graduate Service Assistantships are available for work in several units on campus, including but not limited to, the Division of Student Affairs, ITSS, and Athletic Department. Graduate students are employed half-time or quarter-time, for work in a particular service unit related to their area of academic interest. Stipends vary with the time devoted to service work but usually are comparable to the stipends of graduate teaching assistants. Tuition may be waived for these assistantships. Academic load requirements are the same as for teaching assistantships.

Degree Requirements

It is the student’s responsibility to be familiar with the requirements for a degree. The student may expect guidance from the advisor and the staff in the Graduate School. The requirements are listed in this section of the catalog and in the section entitled “Departmental Programs.”

MASTER OF ARTS, MASTER OF SCIENCE

These degrees are available with a thesis option in most fields. A non-thesis option also is available in selected fields.

Thesis Option

Course Requirements: A minimum of 30 semester credits is required in a program of study for the M.A. or M.S. degree in a major field. This includes the credits granted for the thesis and the research leading to the thesis. At least one-half of the credits must be at or above the 500-level. Fifteen semester credits must be taken on-campus. A maximum of eight semester credits may be transferred from another institution. Workshop credits are normally not accepted on the program of study, but may be considered with the approval of the advisory committee and the dean of the Graduate School. A maximum of four semester credit hours may be considered for inclusion.

The program may include just the major, the major and a minor, or the major and a cognate area. The major must include 20 credits from the major department, and a minor or cognate area must include at least nine credits.

Students should refer to the section of this catalog entitled “Departmental Programs” for the additional admission, degree, examination, and course requirements unique to each department.

Residence Requirement. A student must spend a minimum of one semester or two summer sessions in residence on this campus. Students should expect to spend about the equivalent of two years as a full-time student to complete the M.A. or M.S. program with the thesis. Note: The Residence Requirement is in effect unless modifications have been granted to the department by the Graduate Committee.
Thesis. The student must submit a thesis to the Graduate School as partial fulfillment of the requirements for the degree. Credit will be given for the writing of the thesis and for the research completed and incorporated into the thesis. The amount of credit may vary from four to nine credits and will be determined by the major department. The thesis, prepared under the guidance of the student’s faculty advisor, must show sound method and demonstrate scholarship. All theses must be prepared in accord with the Style and Policy Manual for Theses and Dissertations, one copy of which will be provided to the student by the Graduate School when the program of study is approved. The Manual is also available on the Graduate School’s web site.

The topic for a thesis must be approved by the student’s Faculty Advisory Committee. Approval is effected by the student’s completing a form entitled Proposal of Thesis, available with instructions from the Graduate School, then submitting the proposal to the Advisory Committee for its approval. The approved proposal is then filed in the Graduate School to become part of the record. The proposal must be approved before the beginning of the semester in which the student expects to graduate, and must be filed in the Graduate School before a student is advanced to candidacy for a master’s degree.

A preliminary draft of the thesis must be presented to the Advisory Committee sufficiently in advance of the preliminary approval deadline that the Advisory Committee may thoroughly evaluate and correct the thesis. After the necessary corrections and changes have been made, the student should secure the committee members’ signatures on a form entitled Preliminary Approval of Theses and Dissertations, available on the Graduate School’s web site, and file this form in the Graduate School. The Preliminary Approval, which indicates to the student that no major changes will be required in the final copy of the thesis, must be in the Graduate School no later than the deadline specified in the Academic Calendar, or the student will not be permitted to graduate that semester.

Copies of the thesis in its final form must be prepared and presented to the student’s Faculty Advisory Committee in time that they may thoroughly read the thesis prior to the final examination. When the final version of the thesis has been approved by the Committee, a copy must be deposited in the Graduate School and receive the signed approval of the dean by the deadline announced in the Academic Calendar (usually two weeks prior to commencement).

The Graduate School will have the final copy of the thesis bound and cataloged in the University Library. The student must submit one copy to the major department and one to the advisor.

Candidacy for the Degree. Admission of a student to the Graduate School as a Degree Student in Approved Status implies only that the student has met the minimal entrance requirements and will be permitted to take graduate courses which normally will lead to a degree. The student has not been admitted as a candidate for a degree. Advancement to candidacy is a formal procedure and can be granted only after the student has met certain academic requirements. To become a candidate for the Master of Arts or Master of Science (thesis options), the following requirements must be met in approximately the following sequence:

1. Completion of the equivalent of one full-time semester (12 semester credits).
2. A GPA of at least 3.00 for all work attempted.
3. Approval of a Faculty Advisory Committee. This Committee is appointed by the dean upon the recommendation of the chairperson, or designate, of the student’s major department and normally will consist of three members, but may consist of four. The form for Committee appointments is available at the Graduate School and on the Graduate School web site. If the student intends to include a minor on the program of study, one committee member must be chosen to represent the minor field. The chairperson of the Committee normally must be a Full Member of the Graduate Faculty but may be an Associate Member under certain conditions, must represent the student’s area of interest, and must serve as the thesis advisor. The Committee is responsible for program advisement, thesis advisement, and examination of the student.

4. Approval of a Program of Study. Until such time as a student selects a thesis advisor, the department chairperson, or designate, will act as a temporary advisor for the selection of courses, etc. After the formation of a Faculty Advisory Committee, the student and the Committee should formulate a Program of Study for the degree on a form available from the Graduate School and on the Graduate School web site. The program should be developed early in the second semester of enrollment. After the program has been signed by the student and the Committee, it is submitted to the Graduate School for the approval of the dean.

5. Approval of a Proposal of Thesis on a form available from the Graduate School and on the Graduate School web site. This proposal, when approved by the Faculty Advisory Committee and deposited in the Graduate School, indicates acceptance of a topic for study and incorporation into a thesis. The proposal must be filed at the Graduate School the semester or session prior to the one in which the student expects to graduate.

Students and their advisors will be notified in writing of the advancement to candidacy. Students must complete all requirements for advancement to candidacy prior to the semester in which they plan to graduate.

Final Examinations. Students are required to present themselves for a final examination before their full Faculty Advisory Committee. The examination will be written and/or oral and will include defense of the thesis, but also may include examination over the course of study for the degree. Examinations are to be scheduled one week in advance by the Committee through the Graduate School. The results must be reported to the Graduate School, on the Final Report on Candidate form, by the deadline specified in the Academic Calendar. The Committee members must have had an opportunity to examine the final copy of the thesis prior to the examination and will indicate their approval by signing the approval page of the thesis. Final examinations which are failed may be repeated only with the prior approval of the Advisory Committee and the Dean.

Non-Thesis Option

The degrees Master of Arts and Master of Science without a thesis are available only in selected fields. Except as noted below, the requirements are the same as those listed under the thesis option.

Course Requirements. A minimum of 32 semester credits is required for the degree. This includes 2 credits in the major for an independent study report for which the student registers for the course numbered 997.

The program may include just the major, the major and a minor, or the major and a cognate area. The major must include at least 22 credits from the major department and a minor or cognate area must include at least nine credits.

Students should refer to the section of this catalog entitled Departmental Programs for additional admission, degree, examination, and course requirements unique to each department.

Residence Requirement. There is no residence requirement for the non-thesis M.A. and M.S. degrees; however, at least half of the credits for the degree must be taken on the UND campus.
Independent Study. The independent study is designed to require the student independently to investigate a topic related to the major field of study. The study need not be an original contribution to knowledge but may be a presentation, analysis, and discussion of information and ideas already in the literature of the field. The requirement is to ensure that a student can investigate a topic and organize a scholarly report on the investigation.

The topic for an independent study must be approved by the student’s advisor. Approval is effected by the student’s completing a form entitled Topic Proposal of Independent Study, available with instructions from the Graduate School and on the Graduate School web site, then submitting the proposal to the advisor for approval. The proposal, which must be approved no later than the semester or session prior to the one in which the student expects to graduate, must be filed in the Graduate School to become part of the record before a student is advanced to candidacy for a master’s degree.

Students must prepare and secure the advisor’s approval of an independent study report. Three copies of the report (one each for the student, the advisor, and the department) must be accepted by the advisor who will certify completion of the report to the Graduate School by the deadline specified in the Academic Calendar and submit a grade for 997-Independent Study to the Office of the Registrar.

Candidacy for the Degree. The requirements for advancement to candidacy under the non-thesis option are the same as those listed under the thesis option with the following exceptions:

1. Advisor. Students must obtain the appointment of an advisor from the major department. The advisor, who must be a member of the Graduate Faculty, will be appointed by the dean, upon the written recommendation of the chairperson, or designate, of the student’s major department. The advisor is responsible to the department and to the Graduate School for the supervision of the student’s work.

2. Program of Study. Students must submit a Program of Study for Graduate School approval which will have been developed in consultation with the advisor and signed by the departmental chairperson (or designate). If a minor is declared, the program also must be signed by the chairperson of the minor department. The Program of Study should be developed early in the second semester and submitted to the Graduate School.

3. Topic Proposal of Independent Study. Students must obtain approval of a topic for the independent study. The advisor approves the Topic Proposal of Independent Study, and the student submits the form to the Graduate School to become part of the record. The topic proposal must be filed prior to the semester or session in which the student expects to graduate.

Final Examinations. Those advanced to candidacy for non-thesis master’s degrees must pass written final comprehensive examinations which must cover the major field but may, at the advisor’s discretion, draw upon or cover the supporting areas. Such examinations generally will be given and evaluated by the major department, but the results will be certified to the Graduate School by the advisor and the department chairperson on the form Final Report on Candidate by the deadline specified in the Academic Calendar. The appropriate comprehensive examination(s) will be arranged by the director and administered by the department no earlier than the semester preceding the semester in which the candidate intends to graduate. Comprehensive examinations which are failed may be repeated only with the prior approval of the advisor, the department, and the dean, but in no event earlier than at the next regularly scheduled offering.

Candidates may not take the final comprehensive examination(s) unless they have been advanced to candidacy for the degree, and are in satisfactory academic standing.

MASTER OF BUSINESS ADMINISTRATION
(See Business Administration under Departmental Programs)

MASTER OF EDUCATION

The Master of Education degree (M.Ed.) is designed for those who wish to prepare for careers as teachers, specialists, administrators, or supervisors in elementary or secondary schools. To be eligible for the degree, a student must meet the undergraduate requirements in Education, i.e., eighteen semester credits in Education, including student teaching, and must be offered admission to the degree program by the dean of the Graduate School.

The Master of Education degree is available for those doing major work either within or outside of the College of Education and Human Development. The areas of concentration available are: Educational Administration, Elementary Education, Special Education, and Reading Education. The degree also is available in departments offering a secondary teaching major.

Course Requirements. A minimum of 32 semester credits is required for the M.Ed. degree, of which at least one-half must be at or above the 500-level. No less than 12 credits, including 2 for the Independent Study Report (997), must be in a single field or an area of concentration (major). At least six credits must be in an area or areas cognate to the area of concentration. At least six credits must be in the Foundations of Education. A total of sixteen credits may be taken off-campus.

Residence Requirement. There is no residence requirement for the M.Ed. degree; however, at least one-half of the graduate program must be taken on this campus.

Transfer of Credit. A maximum of eight credits may be transferred from another institution.

Workshop Credit. A maximum of four credits may be taken in approved workshops, but workshop credits normally are not included in the program of study.

Independent Study. The independent study is designed to enable the student independently to investigate a topic related to the major field of study. The study may be a presentation, analysis, or discussion of information and ideas already in the literature of the field. The requirement is designed to ensure that a student can investigate a topic and organize and present a scholarly report on the investigation.

The topic for an independent study must be approved by the student’s advisor. The independent study proposal, which must be approved no later than the semester or session prior to the one in which the student expects to graduate, must be filed in the Graduate School before a student is advanced to candidacy for a master’s degree.

The student must prepare and secure the advisor’s approval of an independent study report. Three copies of the report (one each for the student, the advisor, and the department) must be accepted by the advisor who will certify completion of the report to the Graduate School by the deadline specified in the Academic Calendar and submit a grade for 997-Independent Study to the Office of the Registrar.

Candidacy for the Degree. To become a candidate for the Master of Education degree the following requirements must be met in approximately the following sequence:

1. Completion of the equivalent of one full-time semester (12 semester credits).
2. A GPA of at least 3.00 for all work attempted.
3. Appointment of an advisor from the major department. The advisor, who must be a member of the Graduate Faculty, will be appointed by the dean upon recommendation of
the chairperson of the student’s major department. The form for advisor appointment is available at the Graduate School or on our web site at: http://www.und.edu/dept/grad/. The advisor is responsible to the department and the Graduate School for the supervision of the student’s work.

4. Approval of a Program of Study on a form available from the Graduate School or on the web site. The program, which should be developed in consultation with the advisor, early in the second semester, must bear the signature of the student, the advisor, and the department chairperson (or designate) and must be submitted to the dean of the Graduate School for approval.

5. Approval of a topic for the independent study by having the advisor sign the Proposal of Independent Study form and submitting the Proposal to the Graduate School.

The student and the advisor will be notified in writing of the advancement to candidacy. Students must complete all requirements for advancement to candidacy prior to the semester in which they plan to graduate.

Final Examinations. Candidates for the Master of Education degree must pass written final comprehensive examinations which must cover the major field but may, at the advisor’s discretion, draw upon or cover the supporting areas. Such examinations generally will be given and evaluated by the major department, but the results will be certified to the Graduate School by the advisor and the department chairperson on the form, Final Report on Candidate, by the deadline specified in the Academic Calendar. The appropriate comprehensive examination(s) will be arranged for by the advisor and given by the department no earlier than the semester preceding the semester in which the candidate intends to graduate. Comprehensive examinations which are failed may be repeated only with the prior approval of the advisor, the department, and the dean, but in no event earlier than at the next regularly scheduled offering.

Candidates may not take the final comprehensive examination(s) unless they have been advanced to candidacy for the degree, and are in satisfactory academic standing.

COMBINED DEGREES

The University of North Dakota is currently offering combined degrees in Business Administration, Chemistry, Public Administration, Chemical, Mechanical, Civil and Electrical Engineering. The intention ithe of these programs is to allow qualified students to complete requirements for both a baccalaureate degree and a master’s degree in one year beyond that which is required to receive the undergraduate degree.

ENGINEERING COMBINED DEGREE PROGRAMS

To encourage undergraduate engineering students to extend their studies to include a graduate degree, the School of Engineering and Mines has a combined program, which permits students to earn both bachelor’s and master’s degrees in an engineering discipline. This program allows students to designate two three-credit graduate courses to count for both degrees. The selected courses must have graduate course standing and be designated when a student requests admission to the program.

Students may be admitted to the engineering combined degree program after the completion of 95 credit hours towards the bachelor’s degree with a GPA of at least 3.0 and before completion of the bachelor’s degree.

The deadline for a completed application to be received in the Graduate School is one week after the start of classes. A complete application includes:

- Graduate School Application and application fee
- Three letters of reference
- Statement of Purpose
- Transcripts
- Program of Study-Engineering Combined Degree (The two three-credit hour courses designated for both degrees must not have been completed at the time of application and they must have graduate course standing.)

The student is admitted to the Graduate School on completion of 125 credit hours towards the bachelor’s degree with a GPA of 3.0 or higher.

Students in the program may opt to be awarded their bachelor’s and master’s degrees sequentially or at the same time.

Students interested in these programs need to refer to the individual departments for admission and program requirements.

Applications must be completed by:
- August 15 for Fall Semester Admittance
- December 15 for Spring Semester Admittance
- April 15 for Summer Semester Admittance

MASTER OF ENGINEERING

The Master of Engineering (M. Engr.) is a professional degree with a program designed to provide a strong emphasis toward the practice of engineering in industry, business, or government. The focus of the program is on the development of competency in the area of engineering design, with the goal of developing the student as a practitioner capable of solving complex problems within a given field. It is available in Chemical, Civil, Electrical, and Mechanical Engineering.

The graduate degree program includes a minimum of one-third year of design, and may include another one-third year of mathematics, basic science, and engineering design. A part of each program is the successful completion of a design project appropriate to the field.

Students should refer to the section of this catalog titled “Departmental Programs” for the admission, degree, examination, and course requirements unique to each department.

Admission Requirements:

1. A baccalaureate degree in an engineering or science field from an accredited university.
2. A minimum of 36 course hours of approved engineering coursework, including background work in the proposed area of concentration. Additional courses needed to satisfy the ABET requirement for basic level accreditation may be taken after admission.
3. The scholastic ability required for pursuing advanced academic work. A GPA of 2.50 (A = 4.00) for all previous academic work undertaken, or a GPA of 3.00 for the last two years of undergraduate work undertaken.

4. Scores from the General Test portion of the Graduate Record Examination if graduated from a non-accredited undergraduate program.

Course Requirements. The program of study for the M. Engr. degree must contain at least 30 credits, including at least 15 credits at the 500-level. An engineering design project must be completed and registered for through Engineering 595 for 3-6 credits. A written report on this project is required. All major department courses must be at the 400-level or above, and no courses numbered below 300 may be included in the program.

Residence Requirement. There is no residence requirement for the M. Engr. degree; however, at least one-half of the credits for the degree must be taken on this campus. A maximum of eight credit hours may be transferred from another institution.
Candidacy for the degree. Admission of a student to the Graduate School as a degree student in Approved Status implies only that the student has met minimum entrance requirements and will be permitted to take graduate courses which may be expected to lead to a degree. The student has not been admitted as a candidate for a degree. Advancement to candidacy is granted only after the student has met the following requirements in approximately the following sequence:

1. Completion of the equivalent of one full-time semester (12 semester credits).
2. Attainment of a GPA of at least 2.75 for all work attempted.
3. The appointment of an advisor from the major department. The advisor, who must be a member of the Graduate Faculty, will be appointed by the dean upon the recommendation of the chairperson of the student’s major department and the dean of the School of Engineering and Mines. The advisor is responsible to the department and the Graduate School for the supervision of the student’s work.
4. Approval of a Program of Study on a form available from the Graduate School or the Graduate School’s web site. The program, which should be developed in consultation with the advisor, early in the second semester, must be signed by the student, the advisor, the department chairperson (or designate), and the dean of the School of Engineering and Mines, and must be submitted to the dean of the Graduate School for approval.
5. The appointment of an advisor from the major department. The chairperson of the Committee must sign the Proposal of Design Project and submitting the Proposal to the Graduate School.

The student and the advisor will be notified in writing of the advancement to candidacy. Students must complete all requirements for advancement to candidacy prior to the semester in which they plan to graduate.

Final Examination. Candidates for the Master of Engineering degree must pass written final comprehensive examination(s) which must cover the course material in the field of study. Such examinations generally will be given and evaluated by the major department, but the results must be certified to the Graduate School by the advisor and the department chairperson on the form Final Report on Candidate by the deadline specified in the Academic Calendar. The appropriate comprehensive examination(s) will be arranged by the advisor and given by the department no earlier than the semester preceding the semester in which the candidate intends to graduate. Comprehensive examinations which are failed may be repeated only with the prior approval of the advisor, the department, and the dean of the Graduate School, but not earlier than at the next regularly scheduled offering.

MASTER OF ENVIRONMENTAL MANAGEMENT
(See Earth System Science and Policy under Departmental Programs)

MASTER OF FINE ARTS
(See Visual Arts under Departmental Programs)

MASTER OF MUSIC
(See Music under Departmental Programs)

MASTER OF PHYSICIAN ASSISTANT STUDIES
(See Physician Assistant Studies under Departmental Programs)

MASTER OF PUBLIC ADMINISTRATION
(See Public Administration under Departmental Programs)

MASTER OF SOCIAL WORK
(See Social Work under Departmental Programs)

SPECIALIST DIPLOMA

The Specialist Diploma is available only in the field of Educational Leadership. This program requires the equivalent of two full years of study beyond the bachelor’s degree or one full year of study beyond the master’s degree. The Specialist Diploma ordinarily is a terminal program of advanced preparation for professional practice.

Admission Requirements:
1. A master’s degree, normally in Educational Leadership.
2. Significant experience in teaching and administration.
3. A minimum of eighteen semester credits, including student teaching, of undergraduate preparation in Education.
4. A GPA of at least 3.50 for all graduate work completed.

Course Requirements. A minimum of 64 credits beyond the bachelor’s degree is required for the Specialist Diploma, including 4 credits for the Independent Study Report (997). One half of the credits for the diploma must be for courses numbered 500 or higher. The program in Educational Leadership will include an area of concentration of at least 40 credits, including at least 20 credits in Educational Leadership, and one or two cognate areas totaling 12-24 credits.

Students are referred to the section of this catalog entitled Department Programs for additional departmental requirements.

Residence Requirements. Following the awarding of the master’s degree, all students must spend either one semester or one summer session in residence.

Independent Study Report. The independent study is designed to require the student to investigate a topic related to the major field of study. The study need not be an original contribution to knowledge but may be a presentation, analysis, and discussion of information and ideas already in the literature of the field. The requirement is to ensure that a student can investigate a topic and organize a scholarly report on the investigation.

The topic for an independent study must be approved by the student’s Advisory Committee. Approval is effected by the student’s completing a form titled Proposal for Independent Study, available with instructions from the Graduate School, then submitting the proposal to the Committee for approval. The proposal, which must be approved no later than the beginning of the semester or session in which the student expects to graduate, must be filed in the Graduate School before a student is advanced to candidacy.

A report of an independent study must be prepared and submitted to the Faculty Advisory Committee for approval. Three copies of the report (one each for the student, the advisor, and the department) must be accepted by the Faculty Advisory Committee who will certify completion of the report to the Graduate School by the deadline specified in the Academic Calendar. The advisor will submit a grade for 997-Independent Study to the Office of the Registrar.

Candidacy for the Diploma. Candidates for a Specialist Diploma will not be permitted to graduate in the same semester or summer session in which they become a candidate. Students in Approved Status may be advanced to candidacy for the Specialist Diploma when the following requirements have been fulfilled:

1. Completion of the equivalent of a full-time semester (12 semester credits) with a satisfactory GPA.
2. Appointment of a three-member Faculty Advisory Committee. This Committee is appointed by the dean upon the written recommendation of the chairperson of the student’s major department. The chairperson of the Committee must be a Full member of the Graduate Faculty. Until the ap-
pointment of the Committee, the department chairperson, or designate, will act as the student’s temporary advisor.

3. Approval of a Program of Study for the diploma. The program is developed by the student and the Committee on a form available from the Graduate School. The program, which must carry the signatures of the student and the Committee, is submitted to the dean of the Graduate School for approval.

4. Approval of a Proposal for Independent Study on a form available from the Graduate School. This proposal, when approved by the Committee and filed in the Graduate School, indicates acceptance of the topic for study and incorporation in a report.

5. Completion of the required practicum or internship.

6. Completion of departmental testing requirements.

Students and their advisors will be notified in writing of advancement to candidacy.

**Final Examinations.** All students must pass written comprehensive examinations covering the program of work approved for the diploma. The examinations normally are given and evaluated by the department in the period 30 days before the Final Report deadline. Comprehensive examinations which are failed may be repeated only with the prior approval of the Advisory Committee, the department, and the dean, but in no event earlier than at the next regularly scheduled offering.

Candidates may not take the final comprehensive examination(s) unless they have applied to receive the diploma, have been advanced to candidacy for the diploma, and have been certified, in writing, as eligible by the Graduate School.

**DOCTOR OF ARTS**

The Doctor of Arts degree program is designed to prepare teachers for four-year and two-year colleges in subject matter fields. The recipient of this degree must have demonstrated a command of knowledge in the broad field of the degree and an ability to teach the subject at the post-secondary level. This degree does not require the preparation of a dissertation but does require the student to obtain some experience in independent research and write a formal report thereon.

The D.A. degree is available only in the department of History. Only those persons holding a master’s degree in history or a closely related field are eligible for admission to a program leading to the D.A. degree.

Students should refer to the section of this catalog titled “Departmental Programs” for additional admission, degree, examination, and course requirements unique to each department.

**Admission Requirements:**

1. An overall GPA of at least 3.50 for all graduate work.
2. A master’s degree.
3. Scores on the general and advanced tests of the Graduate Record Examination if appropriate.
4. Recommendation for doctoral work by the department.

In History, a master’s degree with thesis is preferred, and the master’s program must have a minimum of fifteen semester hours of history at the graduate level. Acceptance of a student for doctoral work, on the basis of the above criteria, does not imply or guarantee advancement of the student to candidacy for the degree.

**Program Requirements.** The D.A. degree requires the completion of a program of 90 semester credits beyond the baccalaureate degree, including acceptable master’s work. The program of study for the degree, prepared with the assistance of the Faculty Advisory Committee, and approved by the dean, will include:

1. A minimum of 60 credits of work in the discipline (the major) of which no more than 20 credits will be designated as an area of concentration. Included in the area of concentration will be a minimum of 5 credits of independent research.
2. A minimum of 10 credits in areas cognate to the major.
3. A minimum of 15 credits in college teaching. The majority of this work will be in a supervised teaching internship in the discipline and in work in the major department preparatory to the internship (seminars in college teaching, etc.).

With the approval of the student’s Committee and the dean, up to one-half of the work beyond the master’s degree may be transferred from another institution.

**Residence Requirement.** At least two regular consecutive semesters of residence are required at the University of North Dakota campus.

**Internship.** A teaching internship during which the student is required to teach college-level courses under supervision is a necessary part of each student’s program. This teaching may be done at the University of North Dakota or at a cooperating institution. If done at a cooperating institution, the student will be under the joint supervision of a resident professor and the chairperson of the student’s Advisory Committee.

**Research Project.** All D.A. students must complete a research project and register for at least five semester credits. The project will be conducted under the direction of a member of the Faculty Advisory Committee, usually the chairperson, who is responsible for assigning a final grade. The proposed project must be approved by the Faculty Advisory Committee and the director of doctoral study of the department (if appropriate), and the dean of the Graduate School.

A copy will be filed with the department and the Graduate School.

A copy of the final D.A research paper must be submitted to the Graduate School by the deadline published in the Academic Calendar (usually two weeks prior to graduation). The paper will be published by University Microfilms International and bound and deposited in the Chester Fritz Library. The paper must conform to the format guidelines of the Graduate School as published in the Style and Policy Manual for Theses and Dissertations.

**Comprehensive Examination.** A written comprehensive examination is required before advancement to candidacy for the D.A. degree. This examination must cover the broad field of the major and be prepared and evaluated by the Graduate Faculty of the student’s major department.

Students must apply for permission to take the comprehensive examination on a form available at the Graduate School. After checking the record to ensure that the student is eligible for the examination (most of the work completed, in Approved Status, Program of Study approved), the Graduate School will certify eligibility and will forward an examination report form to the chairperson of the student’s Faculty Advisory Committee. The student may not take the examination until such certification has been provided. Comprehensive examinations which are failed may be repeated only with the prior approval of the Advisory Committee, the department, and the dean, but in no event earlier than at the next regularly scheduled offering.

**Candidacy for the Degree.** Candidates for the D.A. degree will not be allowed to graduate in the same semester or summer session in which they become candidates.

Students in Approved Status may be advanced to candidacy when the following requirements have been fulfilled:
1. A three- or five-member Faculty Advisory Committee has been appointed. Committee members are appointed by the dean upon the written recommendation of the chairperson of the student’s major department. On five-member committees, the fifth member is appointed by the dean. Until the appointment of the committee, the department chairperson, or designate, acts as the student’s temporary advisor. The chairperson of the committee, who serves as the student’s major advisor, must be a Full member of the Graduate Faculty. The director of the student’s research project normally will be the chairperson of the committee.

2. A Program of Study, outlining the requirements for the degree as developed by the student and the committee, has been approved by the student, the committee, and the dean of the Graduate School. The program, executed on a form available from the Graduate School, should be developed no later than the beginning of the second semester of work.

3. Departmental examination requirements have been completed.

4. A substantial portion of the coursework for the degree has been completed with a GPA of no less than 3.0 for all work attempted.

5. The comprehensive examination has been successfully completed.

6. A Research Project has been approved as evidenced by filing an approved Research Proposal on a form available from the department.

7. The Advancement to Candidacy has been recommended by the student’s Faculty Advisory Committee.

The student and the advisor will be notified in writing of advancement to candidacy.

**Final Examination.** The final examination for the D.A. degree is conducted by the candidate’s full Faculty Advisory Committee. The examination will be oral and will be based on the area of concentration and the research project. Final examinations which are failed may be repeated only with the prior approval of the Advisory Committee and the dean.

Examinations are to be scheduled in advance by the Committee through the Graduate School. The results must be certified by the Committee on the Final Report form by the deadline specified in the Academic Calendar.

D.A. candidates will be required to complete a National Research Council demographic survey form and an agreement with University Microfilms, International, prior to graduation.

**DOCTOR OF EDUCATION**

The Doctor of Education degree is the highest University award given in recognition of the completion of academic preparation for professional practice in school teaching fields and in fields preparing school service personnel.

**Admission Requirements**

1. An overall GPA of at least 3.50 for all graduate work completed.

2. A master’s degree or the equivalent.

3. The necessary undergraduate preparation in the field.

4. Completion of any departmental examination requirements, i.e., qualifying or diagnostic examinations.

5. Scores on special tests required by the department.

6. Recommendation for doctoral work by the department concerned. Acceptance of a student for doctoral work, on the basis of the above criteria, does not imply or guarantee advancement of the student to candidacy for the degree.

**Students should refer to the section of this catalog titled “Departmental Programs” for additional admission, degree, examination, and course requirements unique to each department.**

**Program Requirements.** The EdD. degree requires the completion of a program of 96 semester credits beyond the bachelor’s degree, including acceptable master’s and specialist’s work, and the submission of an acceptable dissertation. The emphasis in the program is on courses and seminars to provide extensive knowledge of the field and will provide for the following:

1. Acquisition of broad knowledge in the area of concentration or major (at least 48 credits), in a cognate area, i.e., directly supportive of the area of concentration, and in the Foundations of Education (at least 12 credits).

2. Development of competencies in the scholarly tools required for study and practice in the field (normally 6 semester credits of statistics).

3. The preparation of a dissertation based on the investigation of a topic related to theory and practice in the professional field. The dissertation must demonstrate critical analysis, knowledge of the professional literature, and a familiarity with methods of research, all presented in a scholarly style. A maximum of ten semester credits may be assigned to the dissertation.

4. A period of professional practice in the form of a practicum or internship. At the discretion of the student’s Faculty Advisory Committee, this provision may be waived if the candidate has accumulated sufficient professional experience in the field prior to the completion of the doctoral program.

With the approval of a student’s committee, up to one-half of the work beyond the master’s degree may be transferred from another institution.

**Residence Requirement.** At least two consecutive semesters of residence or other options specified for the doctoral programs are required on the University of North Dakota campus.

**Dissertation.** Each candidate for the Doctor of Education degree must submit a dissertation to the Graduate School in partial fulfillment of the requirements for the degree. The dissertation is prepared with the guidance and advice of the student’s faculty advisor. However, all dissertations must be prepared in accord with the Style and Policy Manual for Theses and Dissertations, which will be provided to each candidate when the program of study is approved. (Copies are also available at the Graduate School’s web site.)

The topic for the dissertation must be approved in advance by the student’s Faculty Advisory Committee. Approval is effected by the student’s completing a form titled Proposal of Dissertation, available from the Graduate School on the Graduate School web site, then submitting the proposal to the committee for approval. The approved proposal must be filed in the Graduate School. The proposal should be approved the semester before the degree is expected, but it must be completed before advancement to candidacy.

The draft of the dissertation should be presented to the Faculty Advisory Committee sufficiently in advance of the Preliminary Approval deadline that a thorough evaluation may be effected by the entire committee. The committee must be able to read the draft, suggest corrections and changes, and the student must be able to make the corrections, all in time for the committee to indicate its approval of the draft by signing a form titled Preliminary Approval of Dissertation. The student must deposit the approval form in the Graduate School by the deadline specified in the academic calendar (usually four weeks prior to commencement). The Preliminary Approval assures the student that no major changes will be required in the final...
copy of the dissertation. Copies of the dissertation in its final form must be presented to the Faculty Advisory Committee in time that they may thoroughly read the dissertation prior to the final examination. When the final version of the dissertation has been approved by the Committee, a copy must be deposited in the Graduate School in time to receive the approval of the dean by the deadline specified in the Academic Calendar (usually two weeks prior to commencement). The advisor and the major department must each be presented one copy of the dissertation. One copy of a special abstract of the dissertation, in a 350-word format described in Style and Policy Manual for Theses and Dissertations, also must be presented with the dissertation. The abstract is published in Dissertation Abstracts by University Microfilms International, and the entire dissertation is microfilmed by the same organization. The Graduate School has the final copy of the dissertation bound and cataloged in the University Library.

Comprehensive Examination. All students seeking a Doctor of Education degree must take a written comprehensive examination after a substantial portion of the coursework has been completed. At the option of the department, an oral examination may also be given. The content of the examination will be determined by the Graduate Faculty of the departments concerned, and the examination will be given at times announced by the departments. The examination must be extensive and searching and cover in depth the field or fields of knowledge in which the degree is taken. This examination must be completed before advancement to candidacy for the degree but cannot be undertaken until the scholarly tool requirements have been completed. Comprehensive examinations which are failed may be repeated only with prior approval of the advisory committee, the department, and the dean, but in no event earlier than at the next regularly scheduled offering.

Students must apply for permission to take the comprehensive examination on a form available from the Graduate School. After checking the record to ensure that the student is eligible for the examination (most of the work completed, Approved Status attained, Program of Study approved, scholarly tool requirements completed), the Graduate School will certify eligibility and will forward an examination report form to the chairperson of the student’s Faculty Advisory Committee. The student may not take the examination until such certification has been provided.

Candidacy for the Degree. A student must fulfill all of the requirements for and be advanced to candidacy prior to the beginning of the semester or summer session in which he/she expects to receive a degree.

Students in Approved Status may be advanced to candidacy for a doctor’s degree when the following requirements have been fulfilled:

1. A five-member Faculty Advisory Committee has been appointed. Four committee members are appointed by the dean upon the written recommendation of the chairperson of the student’s major department and must represent the major and cognate areas of study. The fifth member is appointed by the dean and represents the Graduate Faculty. Until the appointment of the committee, the department chairperson, or designee, acts as the student’s temporary advisor. The chairperson of the Committee, who serves as the student’s major and dissertation advisor, must be a Full member of the Graduate Faculty.
2. A Program of Study, outlining the requirements for the degree as developed by the student and the committee, has been approved by the student, the committee, and the dean of the Graduate School. The program, executed on a form available from the Graduate School, should be developed no later than the beginning of the second semester of work.
3. Departmental examination requirements have been completed.
4. A substantial portion of the coursework for the degree has been completed with a GPA of no less than 3.00 for all work attempted.
5. The scholarly tool requirement has been met.
6. The comprehensive examination has been successfully completed.
7. A dissertation topic has been approved as evidenced by filing an approved Proposal of Dissertation on a form available from the Graduate School.
8. Advancement to candidacy has been recommended by the student’s Faculty Advisory Committee.

The student and the advisor will be notified in writing of advancement to candidacy.

Final Examination. The final examination must be scheduled two weeks in advance by the committee through the Graduate School and must be completed and the results reported by the deadline specified in the Academic Calendar.

The final examination is conducted by the candidate’s full Faculty Advisory Committee in the presence of the dean of the Graduate School and such other members of the Graduate Faculty as elect to attend. The final examination will include an oral examination but also may include written portions. The examination will cover the dissertation but need not be limited thereto. Committee members must have had adequate opportunity to examine the final copy prior to the examination, and will indicate their approval by signing the Approval Page of the dissertation and the Final Report on Candidate. Final examinations which are failed may be repeated only with the prior approval of the advisory committee and the dean.

A student may pass the Doctoral comprehensive and/or Final Examination with one dissenting vote. The dissenter must submit a written report on his/her decision to the Graduate School. Four signatures will be accepted on the final copy of the dissertation.

Ed.D. candidates will be required to complete a National Research Council demographic survey form and an agreement with University Microfilms International before graduation.

DOCTOR OF PHILOSOPHY

The Doctor of Philosophy degree is awarded in recognition of the highest degree of creative scholarship and research in a field of study. The recipient of this degree must have demonstrated proficiency in a broad area of learning and the ability to critically evaluate work in the discipline. The degree is not awarded solely for completing a prescribed number of courses, but for having undertaken and completed independent work in the discipline leading to an original contribution to knowledge.

The Ph.D. degree requires the completion of a program of 90 semester credits beyond the baccalaureate degree and the submission of an acceptable dissertation. A substantial portion of the credits for the program must be devoted to independent research, the results of which are to be incorporated in the dissertation. It is expected that all or part of a Ph.D. dissertation will be publishable in the literature of the discipline and normally will be published. The program will include enrollment in courses and/or seminars which are designed to (a) advance the student’s knowledge in the discipline, (b) provide competence in the scholarly tools (languages, mathematics, etc.) required for study and research in the discipline, and (c) provide competence in the research methods of the discipline, e.g., courses in bibliography or historiography, a research minor in education, courses dealing with current research topics, etc.

Admission Requirements. Generally, students may undertake work that will lead to a Doctor of Philosophy degree only after they
have received a master’s degree, usually in the same academic discipline, from this or another accredited institution; however, in some disciplines it is possible to be admitted directly to the Ph.D. program. In certain disciplines students who have completed the equivalent of the coursework for the master’s degree may be readmitted to work toward the Ph.D. directly, thereby bypassing the master’s degree (see department section). Each student must have: (1) attained an overall GPA of at least 3.50 for all graduate work, (2) completed the necessary undergraduate preparation, (3) completed any departmental examination(s) or other requirements, (4) presented scores on tests required by the department, and (5) been recommended for doctoral work by the department. Acceptance of a student for doctoral work on the basis of the above criteria does not imply or guarantee advancement of the student to candidacy for the degree.

Program Requirements. The Ph.D. degree requires the completion of a program of 90 semester credits of graduate work beyond the bachelor’s degree, including acceptable master’s degree work, and the submission of an acceptable dissertation. With the approval of the student’s Faculty Advisory Committee, up to one-half of the work beyond the master’s degree may be transferred from another institution. The program will include work in one major department and should include work in one or more related departments, i.e., either a minor or cognate area, but at least one-half of the work must be in the major field. The credits for the dissertation (typically 6-18 credits), and the research on which it is based, should comprise a substantial portion of the 90 credits for the degree and should be included in the major part of the program.

Students should refer to the section of this catalog titled “Department Programs” for additional admission, degree, examination, and course requirements unique to each department.

Residence Requirements. Since the Ph.D. is a research degree, the majority of the academic work must be conducted in an academic research environment. Accordingly, the program normally will include provision for two consecutive years of full-time academic work. In most instances this requirement will be met by two consecutive years of residence on the University of North Dakota campus. With prior written approval by the dean, one of the two years of residence may be completed by one year of full-time academic work and/or research at another institution or location. Note: The Residence Requirement is in effect unless modifications have been granted to the department by the Graduate Committee.

Scholarly Tools. Candidates for the Ph.D. degree may have to demonstrate competence in scholarly tools required for study and research in the discipline. Each department offering the Ph.D. degree has specified the nature of these tools (languages, mathematics, statistics, computer programming, etc.). See the “Department Programs” section for more information. This requirement must be completed before the student is permitted to take the comprehensive examination for the degree or become a candidate for the degree.

Students required to demonstrate a reading knowledge of a foreign language may do so by one of two procedures: Standardized tests (Graduate Student Foreign Languages Test - GSFLT) prepared by the Educational Testing Service are available in French, German, Russian, and Spanish and are given by the Counseling Center upon student request. The Languages Department will administer a Reading Test in French, German, Russian, or Spanish. This test is offered three times a year: on Reading and Review day at the end of the fall and spring semesters, and on registration day for the fall semester. Students must sign up for the examination with the department secretary, no later than one week before the examination date. Students may take the examination a maximum of three times at the Languages Department. Students needing to demonstrate a reading knowledge in a language other than those mentioned above should, together with their Advisory Committee, petition the dean for approval of the use of the language and the proposed examination mechanism.

Dissertation. A dissertation is required in partial fulfillment of the requirements for the Ph.D. degree. It must represent an original and independent investigation in the major field of study. Through the dissertation, and the research leading to it, each candidate clearly must have made a significant contribution to the advancement of knowledge in the field. Credit is given for the dissertation and for the research on which it is based, the amount being determined in advance by the student’s Faculty Advisory Committee in accord with the limits established by the major department.

A dissertation is prepared with the guidance and advice of the student’s faculty advisor and the Committee. However, all dissertations must be prepared in accord with the Style and Policy Manual for Theses and Dissertations, a copy of which will be provided each candidate when advanced to candidacy. The Manual is also available on the Graduate School web site.

The topic for the dissertation must be approved in advance by the student’s Faculty Advisory Committee. Approval is effected by the student’s completing a form titled Proposal of Dissertation, available with instructions from the Graduate School and on the web site, then submitting the proposal to the committee for approval. The approved proposal is then filed in the Graduate School. The proposal should be approved the semester before the degree is expected, but it must be approved before advancement to candidacy.

The draft of the dissertation should be presented to the Faculty Advisory Committee sufficiently in advance of the Preliminary Approval deadline that a thorough evaluation may be effected by each committee member. The Committee must be able to read the draft, suggest corrections and changes, and the student must be able to make the corrections, in time for the Committee to approve the dissertation and sign a form titled Preliminary Approval of Dissertation. The student must deposit the Approval Form in the Graduate School by the deadline specified in the academic calendar (usually four weeks prior to commencement). Unless this deadline is met, the student will not be permitted to graduate at the upcoming graduation. The Preliminary Approval assures the student that no major changes will be required in the final copy of the dissertation.

Copies of the dissertation in its final form must be presented to the Faculty Advisory Committee in time that they may thoroughly read the dissertation prior to the final examination. When the final version of the dissertation has been approved by the committee, a copy must be deposited in the Graduate School in time to receive the approval of the dean by the deadline specified in the Academic Calendar (usually two weeks prior to graduation). The advisor and the major department must each be presented one copy of the dissertation. One copy of a special abstract of the dissertation (in a 250-word format described in the Style and Policy Manual for Theses and Dissertations) also must be submitted. The abstract is published in Dissertation Abstracts by University Microfilms International, and the dissertation is microfilmed by the same organization. The Graduate School has the final copy of the dissertation bound and cataloged in the University Library.

Comprehensive Examination. All students seeking a Doctor of Philosophy degree must take a written comprehensive examination after a substantial portion of the coursework has been completed. At the option of the department, an oral examination may also be given. The content of the examination will be determined by the Graduate Faculty of the departments concerned, and the examination will be given at times announced by the departments. The examination must be extensive and searching and must cover in depth the field or fields of knowledge in which the degree is taken. This examination must be completed before advancement to candidacy.
but cannot be undertaken until the scholarly tool requirements have been completed. Comprehensive examinations which are failed may be repeated only with the prior approval of the Faculty Advisory Committee, the department, and the dean, but in no event earlier than at the next regularly scheduled offering.

Students must apply for permission to take the comprehensive examination on a form available at the Graduate School. After checking the record to ensure that the student is eligible for the examination (most of the work completed, Approved Status attained, Program of Study approved, scholarly tool requirements completed), the Graduate School will certify eligibility and will forward an examination report form to the chairperson of the student’s Faculty Advisory Committee. The student may not take the examination until such certification has been provided.

In lieu of the comprehensive examination, students in Chemistry will take cumulative examinations which begin in the second semester of graduate school. Chemistry students will not be required to apply for permission to take the comprehensive.

Candidacy for the Degree. Advancement to candidacy is granted only after the completion of specified academic requirements and upon the recommendation of the Faculty Advisory Committee. Candidates for a doctor's degree will not be allowed to graduate in the same semester or summer session in which they become a candidate for the degree.

Students in Approved Status may be advanced to candidacy when the following requirements have been fulfilled:

1. A five-member Faculty Advisory Committee has been appointed. *Four committee members are appointed by the dean upon the written recommendation of the chairperson of the student’s major department to represent the major and any minor areas of study. The fifth member is appointed by the dean and represents the Graduate Faculty. Until the appointment of the committee, the department chairperson, or designee, acts as the student’s temporary advisor. The chairperson of the Committee, who serves as the student’s major and dissertation advisor, must be a Full member of the Graduate Faculty. An associate member may chair a doctoral student’s faculty advisory committee and direct the dissertation research if approved by the Dean of the Graduate School and is under the direction of a mentor appointed by the Dean of the Graduate School. *Teaching and Learning has four-member Faculty Advisory Committees.
2. A Program of Study, outlining the requirements for the degree as developed by the student and the Committee, has been approved by the student, the Committee, and the dean of the Graduate School. The program, executed on a form available from the Graduate School, should be developed no later than the beginning of the second semester of work.
3. Departmental examination requirements have been completed.
4. A substantial portion of the coursework for the degree has been completed with a GPA of no less than 3.00 for all work attempted.
5. The scholarly tool requirement has been completed.
6. The comprehensive examination has been successfully completed.
7. A dissertation topic has been approved as evidenced by filing an approved Proposal of Dissertation on a form available from the Graduate School.
8. Advancement to candidacy has been recommended by the student’s Faculty Advisory Committee.

The student and the advisor will be notified in writing of advancement to candidacy.

Final Examination. The final examination must be scheduled two weeks in advance by the Committee through the Graduate School and must be completed and the results reported by the deadline specified in the Academic Calendar.

The final examination for the doctoral degree is conducted by the candidate’s full Faculty Advisory Committee in the presence of the dean of the Graduate School and such other members of the Graduate Faculty as elect to attend. The final examination must include an oral examination but also may include written portions. The examination must cover the dissertation but need not be limited thereto. Committee members must have had adequate opportunity to examine the final copy prior to the examination and will indicate their approval by signing the “Approval Page” of the dissertation and the “Final Report on Candidate.” Final examinations which are failed may be repeated only with the prior approval of the Advisory Committee and the dean.

A student may pass the Doctoral Comprehensive and/or Final Examination with one dissenting vote. The dissenter must submit a written report on his/her decision to the Graduate School. Four signatures will be accepted on the final copy of the dissertation.

Ph.D. candidates will be required to complete a National Research Council demographic survey form and an agreement with Proquest UMI before graduation.

DOCTOR OF PHYSICAL THERAPY

(See Physical Therapy under Departmental Programs)

JOINT M.D. - PH.D. PROGRAM

Through the cooperation of the Graduate School and the School of Medicine, students may concurrently pursue the Doctor of Philosophy degree in a medical science field (Anatomy and Cell Biology, Biochemistry and Molecular Biology, Microbiology and Immunology, Pharmacology, Physiology, and Therapeutics) and the Doctor of Medicine degree. The minimum time required to complete the joint program is six years of full-time academic study.

Students interested in the joint M.D. - Ph.D. program should first obtain admission to the School of Medicine and Health Sciences to the M.D. degree program, following the normal application process and meeting the selection criteria. A student admitted to the M.D. program may apply to graduate school as soon as he/she has selected a graduate program, which may occur before matriculation in Medical School but not later than the end of the first year of Medical School.

Final admission requirements for the M.D. - Ph.D. program include:

1. Satisfactory performance in the first two years of the medical education curriculum with passing scores on all required assessment tools.
2. Successful completion of the USMLE Step 1 examination.
3. Satisfactory scores achieved on General and Subject GRE examination or MCAT scores.
4. All other UND Graduate School admission requirements listed in the UND Academic Catalog.

If admission to a Ph.D. program is granted, the student should apply to the School of Medicine and Health Sciences Student Performance and Recognition Committee for a “modification of original program” which will allow the student to pursue the M.D. degree and Ph.D. degree concurrently. The student also must request the
Office of Student Affairs to certify to the Graduate School his/her satisfactory completion of the first two years of the M.D. program.

Students are expected to complete the following general requirements for the Ph.D. degree in a medical science field:

1. Performance of original research of a quality suitable for publication in refereed, professional journals.
2. Pass final examination which includes preparation and oral defense of a satisfactory dissertation.
3. Completion of BIMD 512 and 513.
4. A minimum of 90 credit hours, including research and dissertation.
5. Successful completion of a scholarly tool (Note: May be specified by a department.)
6. Completion of the first two years of the medical education curriculum, transferred as 44 credits toward the Ph.D.
7. Passing comprehensive examinations covering the coursework in the major area.

**MINORS AND COGNATES**

Some degree programs require or permit academic work outside of the area of concentration (major) in a supporting area which may be called a minor area or a cognate area and which must consist of at least nine credit hours.

A minor is a concentrated study in a specific supporting field at the graduate level. A minor must be titled and identified on the student’s program of study and be approved by a Graduate Faculty member of the minor department/program. The minor will be listed on the student’s transcript. Only the courses approved for graduate credit may be included in a minor.

A cognate is a selection of courses providing broad support to the major. All courses numbered 300 or above listed in this catalog, including those offered by departments or fields that do not offer graduate courses or graduate degrees, may be included in the cognate. Courses should be taken in two or three departments or fields. A cognate area will not be titled and will not be listed on a student’s transcript.

**NOTE:** When a graduate student elects to use a 300- or 400-level course for graduate credit, it is understood that the student will be required to do additional work, over and above that typically required of undergraduates. Usually, such work is of an independent nature.

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**Graduate Departmental Courses, Programs**

**COURSE WORK**

Only the courses listed in the Graduate section of this catalog may be used as part of the major or minor for a degree program. Classes numbered 300 or higher are graduate classes; those listed with 300 and 400 numbers are upper division undergraduate classes which have been approved for graduate credit by the University Graduate Committee on the basis that additional work will be required of all graduate students in such courses.

Classes numbered 300 and higher listed only in the Undergraduate section of this catalog may be applied to a cognate area.

**COMMON COURSE NUMBERS**

<table>
<thead>
<tr>
<th>Course Type</th>
<th>Credits</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing Enrollment</td>
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</tr>
<tr>
<td>Independent Study</td>
<td>2</td>
<td>997</td>
</tr>
<tr>
<td>Thesis</td>
<td>4-9</td>
<td>998</td>
</tr>
<tr>
<td>Dissertation</td>
<td>Typically 6-18</td>
<td>999</td>
</tr>
</tbody>
</table>

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**GRADUATE FACULTY**

The faculty listed in the departments are members of the Graduate Faculty. A Full Member may serve as the chairperson of the Advisory Committee for a student pursuing a doctoral degree or specialist’s diploma or an Associate member may chair a doctoral student’s faculty advisory committee and direct the dissertation research if approved by the Dean of the Graduate School and is under the direction of a mentor appointed by the Dean of the Graduate School. An Associate Member may serve as the advisor for a student pursuing a non-thesis master’s degree and, under certain conditions, as the advisor for a student pursuing a thesis master’s degree. Associate Members may serve as members on any Advisory Committee.

**NOTE:** THE ADMISSION AND DEGREE REQUIREMENTS LISTED IN THIS SECTION ARE IN ADDITION TO THE GENERAL GRADUATE SCHOOL REQUIREMENTS.
Anatomy and Cell Biology

Professors Atkinson, Carlson (Chair), Carr, Dunlevy, Grove, Jackson, McCormack, Rieke and Ruit (Director of Graduate Studies), and Adjunct Professor Hunt

Program Description

The graduate program of the Department of Anatomy and Cell Biology leads to the degrees of Master of Science and Doctor of Philosophy. The program is designed to prepare scholars for academic teaching and research, or for careers in a variety of organizations that carry on research and development in biologically or medically related areas. Research facilities and expertise are available in the department in transmission and scanning electron microscopy, developmental biology, reproductive biology, neurosciences, tissue culture, immunohistochemistry, and molecular biology.

Admissions Requirements

1. An overall undergraduate GPA of at least 3.00.
3. A year-long sequence of General Chemistry.
4. A course in Organic Chemistry, a course in College Algebra or the equivalent, and a course in Morphology, e.g., Human Anatomy, Comparative Anatomy, Embryology, Histology; courses in Cell Biology, Biochemistry, and Genetics are also recommended.
5. Graduate Record Examination—Placement in the 40th percentile on GRE General Test (scores from the Advanced Biology test are also recommended).
6. Admission to the Anatomy and Cell Biology graduate program can be made either through the M.S. degree program or by application directly to the Ph.D. degree program.

Students who elect to begin the M.S. degree program and later decide they wish to pursue the Ph.D. degree may choose to attempt to by-pass the M.S. degree by taking a Diagnostic/Qualifying examination. Such an examination is administered by a departmental committee and consists in part of the preparation of a written research proposal by the student, with an oral defense of that proposal. By passing it and by meeting other requirements, such as a GPA of 3.5 or higher in graduate level coursework, a student may be admitted to the Ph.D. program without completing the M.S. program. Otherwise, a student admitted to the M.S. program must complete the degree as listed below.

Other departmental requirements for admission include an overall GPA of 3.50 in previous graduate work and appropriate letters of reference.

Degree Requirements

Master of Science

1. An average of 36-50 semester hours of graduate credit (can be completed in four full semesters and one summer session).
2. Completion of the following core graduate level courses: Bimd 500 (Cellular and Molecular Foundations of Biomedical Science), Bimd 510 (Basic Biomedical Statistics), Bimd 512/513 (Seminar in Biomedical Science), Anat 515 (Histology), Anat 518 (Developmental Biology and Human Embryology), and Anat 505 (Seminar in Anatomy and Cell Biology), one semester for each year in the program, excluding year one.
3. A thesis written on an independent research problem.

Doctor of Philosophy

1. An average of 90-120 semester hours of graduate credit (can be completed in eight full semesters and four summer sessions).
2. Completion of the following core graduate level courses: Bimd 500 (Cellular and Molecular Foundations of Biomedical Science), Bimd 510 (Basic Biomedical Statistics), Bimd 512/513 (Seminar in Biomedical Science), Anat 515 (Histology), Anat 518 (Developmental Biology and Human Embryology), Anat 513 (Gross Anatomy) or Anatomy 522 (Neuroscience), and Anat 505 (Seminar in Anatomy and Cell Biology), one semester for each year in the program, excluding year one.
3. A scholarly tool, the requirement for which is usually fulfilled by completing Computer Science 101/101L, or Anatomy 591 (or their equivalents).
4. Teaching experience in one of the following: a. Gross Anatomy for Medical Students, for Graduate Students or for Physical/Occupational Therapy Students. b. Histology for Medical Students or for Graduate Students. c. Neuroscience for Graduate Students.
5. A dissertation written on an independent research problem.

The department accepts USMLE, Step 1 as the Diagnostic/Qualifying Examination for medical students entering the M.D./Ph.D. program. Students must pass USMLE, Step 1 of the examination.

Courses

BIMD 500. Cellular and Molecular Foundations of Biomedical Science. 7 credits. A series of lectures, discussion groups, and laboratory periods with emphasis on inter-related themes in basic biochemistry, cell biology and molecular biology. Lectures will include current and emerging areas of research while lab/discussion will center on methods, techniques and expansion of lecture topics. Full semester. Prerequisites: (a) a year of organic chemistry or (b) one semester of organic chemistry plus a course in either biochemistry or cell biology, or (c) permission of the course director.

BIMD 510. Basic Biomedical Statistics. 2 credits. A series of lectures, demonstrations and exercises to provide students with the basic rationale for the use of statistics in the assessment of biomedical data and a selected set of the most common and useful statistical tests. Spring Semester.

BIMD 512. Seminars in Biomedical Science. 1 credit. A series of presentations on original research conducted by UND faculty members. Students will participate through assigned reading and writing exercises related to the presentations. Full Semester. Co-requisite: Bimd 500 or permission of course director.

BIMD 513. Seminars in Biomedical Science. 1 credit. A series of presentations on original research conducted by UND faculty members as well as extramural leaders in academic and industrial research in the biomedical sciences. Students will participate through assigned reading and writing exercises related to the presentations. Spring Semester. Prerequisite: Bimd 412 or permission of course director.

501. Biomedical Information Retrieval. 1 credit. SU grading only. Offered every session either in a group setting or on an individual basis. This course integrates electronic information retrieval techniques with biomedical research education to develop the student’s ability to augment traditional learning and research. Electronic techniques covered include data base searching and internet resources.

505. Seminar in Anatomy and Cell Biology. 1 credit each semester. Seminars are designed to present current research activities of the department. In supplement course training by presenting principles of subspecialties of Anatomy not offered as organized courses, and to present current developments in various subspecialties of Anatomy and Cell Biology. Assigned readings and reports by students and lectures by staff and guests comprise the course.

513. Gross Anatomy. 7 credits. This course consists of lectures and laboratory experience providing opportunity for understanding the structure and function of the adult human body. Laboratory work consists of the complete dissection of the human body, study of topographic relations of organs and structures, and the study of normal radiographic anatomy.

515. Histology. 3 credits. A series of laboratory sessions providing a comprehensive study of normal light and electron microscopic structure of cells, tissues, and organs of the body. An introduction to cell and tissue pathology also will be included. Laboratory sessions will include utilization of microscopic tissue slides, video and digital images, student presentations and discussion with faculty.

518. Developmental Biology and Human Embryology. 3 credits. Prerequisite: Bimd 500 or equivalent. A problem-based course in principles of development and human embryology. Topics to include cellular and molecular mechanisms of fertilization, early development, gastrulation and organogenesis. Course will involve student presentations, discussion and laboratory exercises.

522. Neuroscience. 6 credits. A multidisciplinary course designed as a research-oriented approach to introducing students to the fundamentals of neuroscience and their clinical applications. Integrated lectures, laboratories and group discussions address historical as well as current advances in cellular, molecular, developmental, sensorimotor,
regulatory and cognitive neurobiology. Hands-on work in the research laboratory provides exposure to techniques commonly used to address experimental problems, reinforcing basic concepts of neuroscience.

590. Readings in Anatomy and Cell Biology. 1 to 3 credits. Students may elect to do a "readings" project with any of the members of the departmental faculty, in areas related to the faculty member's research field.

591. Special Topics in Anatomy and Cell Biology. 1 to 3 credits. Prerequisite: Permission of the instructor. A series of lectures, discussions, and/or laboratory experiences developed around a specific topic in the anatomical or cell biological sciences.

Anat 593. Research in Anatomy and Cell Biology. Credits arranged. Research is offered in the specialty fields of the faculty of the department, and involves a variety of problems and research methods in morphology and cell biology.

Anat 595. Advanced Gross Anatomy. Credits arranged, with a maximum of six credits. Prerequisite: Anatomy 513 or equivalent. The work of the course consists of the preparation of regional dissections, made under the direction of an instructor.

7 Arts and humanities degree programs in the biomedical sciences or by permission of the instructor.

Art (See Visual Arts)

Atmospheric Sciences

Professors Askelson, Dong, Grainger, Kucera, Osborne (Graduate Director) and Poellot (Chair)

Program Description

The Department of Atmospheric Sciences offers a graduate program leading to the degree of Master of Science. The program is intended to serve those who are interested in continuing graduate studies at the doctoral level as well as those seeking advanced knowledge for professional work in the atmospheric sciences in general.

Admission Requirements

1. A Bachelor's degree from a recognized college or university.
2. Completion of a minimum of 20 semester credits of appropriate undergraduate work, e.g., physics, mathematics, chemistry, engineering, and/or atmospheric science.
3. A cumulative GPA of at least 2.75 for all undergraduate work or a GPA of at least 3.00 for the last two years.
4. Scores on the general portion of the Graduate Record Examination.

Degree Requirements

The program requires that students complete 30 credits of courses from the Department of Atmospheric Sciences. A thesis is required of all students. While the actual courses required for each student will be determined on an individual basis, each student is expected to complete AtSc 500, 505, and to have had the equivalent of AtSc 350.

Courses

500. Introduction to Atmospheric Research. 1 credit. This course is required for all Atmospheric Science graduate students. A course in the methodology and philosophy of doing research in the atmospheric sciences. Also includes discussion of related topics, including creativity, publication, science and society, and career-related activities.

505. Advanced Atmospheric Dynamics. 3 credits. Prerequisite: AtSc 505. A graduate level course in linear perturbation theory, atmospheric oscillations, hydrodynamic instability, and the life cycle of extratropical cyclones.

510. General Circulation. 3 credits. Prerequisite: AtSc 505. Covers the large scale dynamical process in the atmosphere, including the observed circulation, processes that maintain the circulation, mid-latitude wintertime circulation anomalies, large-scale structure of the tropical atmosphere, and the stratosphere and its link to the troposphere.

515. Advanced Climatology. 3 credits. Prerequisites: Math 165 and AtSc 540. A course on climate from the perspective of utilizing climatic knowledge and information to examine the current state of the climate and how this can be used to explore potential future states. Topics included are an introduction to climatology, basic data and their analysis, climatological analysis, statistical methods, applications and synoptic climatology.

520. Atmospheric Chemistry. 3 credits. Prerequisites: AtSc 350. Composition of clean and polluted air. Sources and sinks of atmospheric gases and aerosols. The role of atmospheric chemistry in global environmental issues such as acid rain, visibility reduction, climatic change, oxidant enhancement, etc.


528. Atmospheric Data Analysis. 3 credits. Prerequisite: Proficiency in a programming language. Introduction to techniques used in the analysis of meteorological data and methods for interpreting their effects: polynomial fitting, method of successive corrections, statistical methods, variational techniques, model initialization, data assimilation, and filter design.

530. Numerical Weather Prediction. 3 credits. Prerequisite: AtSc 505. Covers scale analysis in atmospheric prediction; numerical methods; various atmospheric prediction models; the use of filtering, smoothing, interpolation, weighting and adjustment in objective analysis techniques; numerical forecasting; current NWP structures and applications.

535. Measurement Systems. 3 credits. An advanced course in meteorological measurement systems, including coverage of performance characteristics of sensors, calibration standards, measuring devices, the effects of making measurements in the atmospheric environment, meteorological measurement systems, and digital data logging and processing.

540. Statistical Methods in Atmospheric Science. 3 credits. Prerequisites: Math 321 or consent of instructor. A course on statistical methods used to describe, analyze, test, and predict atmospheric phenomena. The topics will review basic statistical concepts, statistical data interpretation, theoretical probability distributions, hypothesis testing, uncertainty analysis, regression, time series analysis, and statistical weather prediction and verification.

545. Hydrometeorology. 3 credits. A course designed to study the coupling of atmospheric and hydrologic processes. Topics will cover basic hydrologic concepts, review of atmospheric thermodynamics, atmospheric moisture, precipitation processes, hydrologic cycle, evaporation/evapotranspiration, infiltration, snow and snowmelt processes, runoff mechanisms, land surface processes, and hydrologic modeling.

555. Advanced Surface Transportation Weather. 3 credits. Prerequisites: AtSc 510, AtSc 455 or consent of instructor. Addresses weather research topics in contemporary surface transportation. Includes maintenance decision support systems construction, applications of artificial intelligence methods, and investigation of land surface effects and applications of advanced mesoscale weather prediction modeling in a surface transportation environment.

570. Seminar. 1 credit, repeatable to 3. A discussion course on current research topics and publications related to the field of atmospheric sciences. Students, faculty and guest speakers will present their research and lead the discussion during seminar. S/U grading only.

575. Current/Special Topics in Meteorology. 3 credits, repeatable to 12. A course in specific advanced topics in atmospheric sciences. Largely done in a structured, lecture format. Special topics will likely include but not be limited to: satellite meteorology, atmospheric turbulence, mesoscale meteorology, convective and planetary boundary layer, chemical and aerosol measurement systems, tropical meteorology, atmospheric electricity, hydrometeorology, and radiative transfer modeling.

594. Independent Studies. 2 credits, repeatable to 4. Survey investigations, literature searches and preliminary research topic of interest to the student.

599. Supervised Research. 1 to 4 credits, repeatable to 12. Supervised research required for completion of the thesis. S/U grading only.

996. Continuing Enrollment

998. Thesis. 1 to 6 credits, repeatable to 9.

441. Radar Meteorology. 4 credits.

450. Introduction to Cloud Physics. Meteorology. 4 credits.

Aviation

Professors Dunlop, Jensen, Lindseth, Marshall (Graduate Director), Smith, Vehnuijen and Watson

Program Description

The Aviation Department offers a graduate program leading to the Master of Science degree. The M.S. in Aviation degree provides the necessary educational background for aviation industry professionals to solve problems within the field of aviation including the airlines, corporate aviation, general aviation, and airport management. Graduates will gain an understanding of the various complexities facing the industry through a breadth of aviation industry related courses. In addition, graduates will gain an understanding of statistics and research methods, and how they may be applied to research and solve problems within the aviation industry. The graduate program will provide the graduates with the knowledge and skill that prepare them for the aviation industry, aviation related government jobs and for further research and development in the field of aviation.
Admission Requirements
1. Bachelor’s degree in Aviation/Aeronautics or Bachelor’s degree from an accredited institution and a minimum of 20 semester credits of appropriate aviation related undergraduate work.
2. GRE exam — General Test
3. Overall undergraduate GPA of 2.75 or a GPA of at least 3.00 for the last two years of undergraduate work.
4. Hold a minimum of a Federal Aviation Administration Private Pilot Certificate or its foreign equivalent.
5. Students must submit a 2-3 page paper answering specific questions per departmental guidelines. One of the questions will address the potential thesis or independent study topic.

Degree Requirements
1. A minimum of 30 credit hours for the thesis option or a minimum of 32 credit hours for the independent study option. Approval of the thesis option will be granted based upon alignment of research interests with departmental faculty’s research interests and faculty availability.
2. Required Core Courses are as follows:
   AVIT 501 General Issues in Aviation/Aerospace 3 credits
   AVIT 502 Aviation Economics 3 credits
   AVIT 503 Statistics 3 credits
   AVIT 504 Research Methods 3 credits
   AVIT 595 Capstone Course 3 credits
   AVIT 997 Independent Study 2 credits
   or
   AVIT 998 Thesis 4 credits
3. In addition to the required core courses, students will select elective courses from the following list to complete the degree.
   AVIT 510 Aviation Public Policy and Regulations 3 credits
   AVIT 511 Aviation Information Technology 3 credits
   AVIT 512 Aviation Environmental Concerns 3 credits
   AVIT 513 Advanced Aviation Safety Management 3 credits
   AVIT 514 Aviation Management Theory 3 credits
   AVIT 515 Human Factors: Human Perception in the Aerospace Environment 3 credits
   AVIT 516 Human Factors: Memory, Learning and Judgment 3 credits
   AVIT 517 Airline Labor Relations and Law 3 credits
   AVIT 590 Aviation Seminar 1-3 credits
   AVIT 593 Individual Research in Aviation 1-3 credits

Courses
501. General Issues in Aviation/Aerospace 3 credits. This course is designed to explore the historical, current and future issues related to the aerospace industry. Course will include issues pertaining to legal, environmental, regulatory, and current events shaping the industry.
502. Aviation Economics 3 credits. Prerequisites: Econ 201 or 202. An in-depth examination of the economic aspects of the air transportation industry, with microeconomic analysis applied to decision making in the airline, general and corporate aviation, and airport businesses. Topics include: basic economics of air transport supply and demand; demand forecasting, cost drivers; network structures and strategies; ratemaking; yield, revenue and capacity management; regulatory issues; political influences; unique economic characters of international commercial aviation; capitalization and credit facilities; economic and structural analytical tools and models.
503. Statistics 3 credits. Prerequisite: An introductory statistics course or calculus course. An in-depth study of inferential statistics with primary emphasis on analysis of variance models, multiple regression techniques, analysis of covariance and other higher order statistical procedures.
504. Research Methods 3 credits. Prerequisites: Avit 503. Methods and procedures of development, design and analysis related to aviation industry research. Topics include problem identification, research design, survey techniques, and data analysis. The course includes the experience of critically evaluating research projects and developing a research project based on the principles discussed in class.
508. Aviation Public Policy and Regulations 3 credits. A discussion of the initiation, formulation, implementation and the enforcement of aviation public policies and their effects upon the various segments of the aviation industry. Various regulatory areas such as scheduled air carriers, general aviation, airport operations, air traffic control and international agreements will be analyzed.
511. Aviation Information Technology 3 credits. This course will focus on a variety of information technology systems that are in use and their impact on successful operations within the aviation industry. An overview of current and emerging technologies in reservation systems, aircraft productivity modeling, air traffic control systems and various database, data communication and e-commerce systems will be explored.
512. Aviation Environmental Concerns 3 credits. An in-depth study of the environmental concerns within the aviation industry and how policy and decision-makers can implement effective strategies toward compatibility between the aviation industry and its environment.
513. Advanced Aviation Safety Management 3 credits. An in-depth study of safety management concepts and principles as they relate to effective safety programs within the airlines, corporate aviation, general aviation and airports.
514. Aviation Management Theory 3 credits. An in-depth review of organizations in the aviation industry, their structures, environments and leadership as it relates to human behavior. Topics include organizational design, climate and the interactions with individuals, groups, and different organizational levels within the management of an airline, general aviation, corporate aviation and airports.
515. Human Factors: Human Perceptions in the Aerospace Environment 3 credits. Human perception and physiology will be discussed in normal conditions and applied to the alterations seen in the aviation environment. Discussion of specific illusions will be incorporated with accident investigation reports and computer simulations. Application of perception principles to workstation and information system design will allow the student to have a greater understanding of human-centered automation goals.
516. Human Factors: Memory, Learning and Judgement: The Challenges of Training and Selection in the Aviation Industry 3 credits. The process of memory, learning and judgment will be discussed in relation to education and performance of aviation professionals. Topics include memory physiology and the effects of bias, attitude, motivation, and personality on crew performance. The course will provide an opportunity to evaluate workload, training systems designs and their effectiveness in training operations, based on the principles discussed in the course.
517. Airline Labor Relations and Law 3 credits. This course will examine the impact and application of the Railway Labor Act and the National Labor Relations Act as they pertain to airline operations. Other legal issues pertaining to the airlines will include consumer protection, anti-trust & monopolies; FAA enforcement procedures and regulatory compliance; multi-district air disaster litigation; Warsaw Convention and international law and treaties; Environmental Protection Act regulations; product liability, and workers compensation.
590. Aviation Seminar 1-3 credits. A series of lectures presented by visiting lecturers and the faculty. May be repeated for up to 4 credits.
593. Individual Research in Aviation 1-3 credits. Individual student projects designed to develop advanced knowledge in a specific area of expertise. A written report is required. May be repeated for up to 6 credits.
595. Aviation Capstone 3 credits. The Capstone course integrates, extends and applies knowledge learned in earlier Aviation courses and reading. The course begins in the spring semester and concludes with an intensive seven-day Capstone (during summer session) experience on the UND campus.
997. Independent Study 2 credits. Independent study and preparation of a written report for students taking the non-thesis option in the Master’s program.
998. Thesis 4 credits. Preparation and defense of a thesis based on original research. Admissions committee approval and consent of instructor required.

Biochemistry and Molecular Biology

Professors Homandberg (Chair), Detke, Lambeth, Milavetz, Miyagi, Shabb, Sukalski (Graduate Director) and Vaughan

Adjunct Professors Combs, Finley, Johnson, Nielsen and Zeng

Program Description
For more information, please visit our WEB site at: http://www.med.umd.edu/umdbiochem.html

The department of Biochemistry and Molecular Biology offers graduate programs leading to the M.S., Ph.D., and M.D./Ph.D. degrees. All programs are research-oriented and students begin research work during their first year. These graduate programs prepare scholars for a variety of careers including academic teaching and research, and research associated careers in various governmental, industrial, and private research laboratories.
The department is housed within the Edwin C. James Medical Research Facility of the University of North Dakota School of Medicine and Health Sciences. Research is conducted in the areas of enzymology, neurochemistry, protein/protein interactions, receptor proteins, signal transduction, membrane transporter regulation, and proteomics. Adjunct professors at the United States Department of Agriculture Human Nutrition Research Center provide additional research opportunities for graduate students in our program. The Center carries out research to assess nutrient needs for humans with an emphasis on determining mineral requirements that prevent disease and promote health and optimal function throughout life.

**Admission Requirements**

1. A minimum of 20 semester credits (or equivalent) in chemistry or in chemistry plus biology, including at least 6 semester hours of credit in organic chemistry.
2. Courses in Analytical Chemistry and Biology are highly desirable.
3. The general Graduate Record Examination is required. An Advanced Graduate Record Examination in an area related to Biochemistry and Molecular Biology is optional.
4. A minimum TOEFL score of 550 for international applicants whose native language is not English.

**Financial Assistance**

Most students are supported by Graduate Teaching or Graduate Research Assistantships. International students whose native language is not English must score at least 50 on the Test of Spoken English to maintain eligibility for a graduate teaching assistantship. Students may apply for admission at any time, but those seeking financial aid should complete their application by March 1, since appointments are generally made in March or early April for the coming academic year.

**Degree Requirements**

### Master of Science

1. A minimum of 30 credit hours including research and thesis.
2. A grade of at least C in BIMD 500.
3. Completion of BIMD 510, 512, and 513.
4. Completion of either Biochemistry and Molecular Biology 531 or 532.
5. Completion of one credit each of Biochemistry and Molecular Biology 514 and 521.
6. An overall GPA of at least 3.0.

### Doctor of Philosophy

1. Performance of original research of a quality suitable for publication in a refereed, professional journal and the preparation of a dissertation based thereon.
2. A minimum of 90 credit hours, including research and dissertation.
3. A scholarly tool (normally met by taking BIMD 510 or its equivalent).
4. A grade of at least B in BIMD 500.
5. Completion of BIMD 510, 512 and 513.
6. Completion of Biochemistry and Molecular Biology 531 and 532.
7. Completion of two credits each of Biochemistry 514 and 521.
8. An overall GPA of at least 3.0.
9. At least 6 credits of formal coursework outside of the department.
10. Passing performance on oral and written comprehensive examinations covering the coursework in the major and related areas.

Work completed for the master’s degree program may be incorporated into the doctoral program if approved by the student’s Advisory Committee and the dean of the Graduate School. Students who wish to proceed toward the Ph.D. degree without obtaining a M.S. in the department must meet the following requirements:

1. Accumulation of a minimum of 26 graduate credits with a GPA of 3.5 or greater.
2. Minimum cumulative GPA of 3.0 in BIMD 500, 510, 512 and 513 and either Biochemistry and Molecular Biology 531 or 532.
3. A minimum of 8 credits of Biochemistry and Molecular Biology 590.
4. Approval of change in program status by two-thirds of the faculty members in the department after review of the student’s academic accomplishments, research performance and professional conduct.

**M.D./Ph.D.**

The Department offers the M.D./Ph.D. degree. For further information consult the Department.

**Courses**

- **BIMD 500.** Cellular and Molecular Foundations of Biomedical Science. 7 credits. Prerequisite: a) one year of organic chemistry or b) one semester of organic chemistry and one course in either biochemistry or cell biology or c) permission of course director. The focus of this interdisciplinary team-taught course will be in areas that are fundamental to all biomedical science graduate programs. Emphasis will be on developing a solid grounding in biochemistry, cell biology and molecular biology with themes covering proteins, metabolism, information flow, vectors, membranes, cell signaling, cell shape and movement, cell growth and division, and immunology.

- **BIMD 510.** Basic Biomedical Statistics. 2 credits. Prerequisites: BIMD 500 or permission of course director. A series of lectures and demonstrations to provide students with the basic rationale for the use of statistics in the assessment of biomedical data and a selected set of the most common and useful statistical tests.

- **BIMD 512.** Seminars in Biomedical Sciences. 1 credit. Corequisite: BIMD 500 or permission of course director. Students will attend a weekly school-wide seminar series. Students will further explore aspects of scientific literature and fundamentals of scientific writing and have opportunities to interact with intramural seminar speakers.

- **BIMD 513.** Seminars in Biomedical Sciences. 1 credit. Prerequisites: BIMD 512 or permission of course director. A series of presentations on original research conducted by UND faculty members as well as extramural leaders in the fields of academic and industrial research in the biomedical sciences. Students will participate through assigned reading and writing exercises related to the presentation.

- **BIMD 514.** Current Literature. 1 credit. Second semester. Prerequisite: BIMD 500 or consent of instructor. Students of the department rotate in leading informal reviews, analyses, and the discussions of research papers selected from current journals in the areas of biochemistry and molecular biology. S/U grading only.

- **BIMD 521.** Seminar. 1 credit. First semester. Prerequisite: BIMD 500 or consent of instructor. Students present topics in biochemistry and molecular biology based on reviews of the current literature. Each presentation is followed by a discussion of the topic by the faculty and students of the department. S/U grading only.

- **BIMD 531.** Advanced Biochemistry and Molecular Biology I. 3 credits. Second semester, alternating years with BIMD 532. Prerequisites: BIMD 500, alternatively Biochemistry 301 or equivalent and permission of instructor. The purpose of this course is to provide an in-depth exploration of selected areas of protein structure and function, metabolism and regulation with the intent of complementing and extending the knowledge base gained in BIMD 500. The course is team-taught. Extensive independent learning is expected.

- **BIMD 532.** Advanced Biochemistry and Molecular Biology II. 3 credits. Second semester, alternating years with Biochemistry 531. Prerequisite: BIMD 500, alternatively Biochemistry 301 or equivalent and permission of instructor. The purpose of this course is to provide an in-depth exploration of selected areas of recombinant DNA technology and eukaryotic nuclear acid metabolism and gene expression with the intent of complementing and extending the knowledge base gained in BIMD 500. The course is team-taught. Extensive independent learning is expected.

- **BIMD 540.** Special Topics. 1 to 3 credits. Prerequisite: BIMD 500 or consent of instructor. Discussion of a topic in biochemistry and/or molecular biology of current interest to faculty and students.

- **BIMD 590.** Research. 1 to 12 credits. The assignments deal with pertinent research problems in various aspects of biochemistry and molecular biology.

- **BIMD 594.** Special Problems in Biochemistry and Molecular Biology. 1 to 6 credits. Prerequisite: Consent of instructor. The student in consultation with a faculty member of the department undertakes a laboratory research project.

- **BIMD 595.** Readings in Biochemistry and Molecular Biology. 1 to 3 credits. Prerequisite: BIMD 500 or consent of instructor. Selected readings and library research in an area of mutual interest to the student and a faculty member of the department. Conferences and/or written reports are required.
Biology
Professors Austin, Carmichael, Crawford, Fivizzani, Goodwin, Kelsch (Chair), Kupchella, La Duke, Meberg, Newman, Potvin, Pyle, Rhen, Schlosser, Sheridan, Switzer and Vaughan

Program Description
The Department of Biology offers graduate studies leading to the Master of Science (thesis or non-thesis option) and Doctor of Philosophy degrees. The Biology Department encourages you to look at the departmental web page for information on faculty and their research interests at: http://www.und.nodak.edu/dept/biology/biology.html. These programs are designed to prepare students for academic teaching and research, and professional research in government service, research and developmental opportunities in industry, and functioning as a professional biologist.

The department offers graduate work in the following areas: Ecology; Behavior; Fisheries Biology; Wildlife Biology; Genetics; Cell Biology and Neurobiology; Morphology; Physiology; Systematics and Molecular Biology. A reputation for excellence in the area of “Ecology of the Northern Great Plains” has been developed, and the Ph.D. program has been designated by the Western Interstate Commission for Higher Education (WICHE) as a Western Regional Graduate Program because of its uniqueness and strength. It is, therefore, open to residents of the 13 western states at resident tuition rates.

Facilities for Graduate Research
The department is located in Starcher Hall which was completed in 1981. This structure contains greenhouse facilities, herbarium, controlled environment chambers, animal rooms for terrestrial and aquatic organisms, observation rooms for behavioral studies, vertebrate and invertebrate research museums, tissue culture, isotope, chromatography, DNA sequencing, and data analysis rooms, molecular biology laboratories, and a darkroom.

The department operates two field stations for research and class use. The Forest River Biology Area is 40 miles from the campus. It includes habitats suitable for studies in aquatic and woodland biology, spring brook, swamp, moist and dry woods, and a section of the Forest River. The Oakville Prairie Station consists of 200 acres of virgin lowland prairie and is located 12 miles from the campus.

The Biology Department and the North Dakota Game and Fish Department have a history of cooperative research involving the management of sport and commercial fisheries and wildlife. The department participates in the planning for the University of Minnesota Forestry and Biological Station at Itasca through representation on the Itasca Advisory Council.

Admission Requirements
1. An undergraduate major or its equivalent in the biological sciences with at least 24 semester credits in biology.
2. Graduate Record Examination—both the General and the Advanced Test in Biology (Doctoral applicants must average at least the 50th percentile).

Students admitted to the M.S. program may, after one calendar year, and upon the recommendation of his/her advisory committee, request to by-pass the masters degree and work directly toward the Ph.D. degree. The same GRE and GPA requirements apply for by-pass as for students applying for the doctoral program and through normal application procedures, i.e., GRE scores averaging 50 percentile and a GPA no lower than 3.5 for work completed while in the M.S. program. The recommendation of the advisory committee shall be brought to a vote in a faculty meeting. A minimum of one week before such a meeting, the faculty shall be notified that the student’s updated file shall consist of the materials used for application to the M.S. program, a transcript of all academic work completed at UND, and any additional materials the student wishes to have considered.

An examination of equivalent nature to a M.S. comprehensive examination will be given by the student’s advisory committee and, upon successful completion, the student may obtain admission to the doctoral program.

Students seeking summer or fall admission should complete their applications by February 15. Master’s degree applicants should specify interest in either the thesis or non-thesis option. Inquiries should be directed to the Director of Graduate Studies, Biology Department.

Financial Assistance
Financial aid in the form of teaching assistantships, research assistantships, fellowships and internships are available on a competitive basis. Students seeking teaching assistantships should complete their applications by February 1, since most offers for appointments are made beginning in early March. Teaching assistantships are renewable if progress toward the degree and instructional service are satisfactory. Research assistantships may be offered by faculty members for work on specific research projects for nine- or twelve-month periods.

Degree Requirements
Master of Science
This degree program is designed to produce broadly trained biologists for job opportunities or continued graduate study.

Thesis Option
1. Thirty (30) credit hours including research and thesis, as well as a minimum of two credits of seminar.
2. Successful completion of a comprehensive examination administered by the student’s advisory committee.

Non-Thesis Option
1. Thirty-two (32) credits including a minimum of 23 credits in the major.
2. A minimum of two credits of seminar.
3. Preparation of a written independent study and oral presentation of the results to the advisor and interested faculty.
4. Written comprehensive final examination.

Doctor of Philosophy
1. Performance of research suitable for publication in refereed professional journals, and the writing of a dissertation based thereon.
2. Four (4) credits of seminar.
3. Scholarly tool requirement of the following options: (1) reading knowledge of two foreign languages; (2) reading knowledge of one foreign language and 5 credits of coursework in a supporting area; (3) five credits of coursework in each of two supporting areas. (Supporting areas include anatomy, biochemistry, chemistry, computer science, microbiology, physiology, psychology, or statistics.)
4. A minor is not required, but each student is expected to show competence in related areas as determined by the student’s advisory committee.

Work completed on a master’s degree program may be incorporated into the doctoral program if approved by the student’s advisory committee and the dean of the Graduate School.

Courses
503. Seminar 1 credit. Discussion of selected topics in advanced biology, a different topic each semester.
520. Helminthology 3 credits. Prerequisite: Biology 364 or equivalent. Morphology, physiology, and life histories of the worm parasites of humans and other animals.
University of North Dakota

522. Medically Important Arthropods. 2 credits. Prerequisites: Biology 363 or 364 or equivalent. The biology, distribution, and health significance of insects and arachnids having human and veterinary importance.

533. Grassland Ecology. 2 credits. Prerequisite: Biology 332 or equivalent. Phytogeography, environmental influences, and community dynamics of grassland ecosystems with emphasis on herbage production, ecosystem modeling, and ecological characteristics of major grass species.

534. Quantitative Ecology. 2 credits.

539. Animal Societies. 2 credits. Prerequisite: Biology 338 or equivalent. Social organization in animals, emphasizing division of labor, communication, reproductive behavior, and adaptations to the environment.

540. Waterfowl Biology and Management. 2 credits. Classification, biology, and management of waterfowl.

542. Comparative Endocrinology. 3 credits. A comparative study of the hormonal regulation of physiological processes and mechanisms of hormone action in vertebrates and invertebrates.

551. Biochemical Genetics. 3 credits. Prerequisite: Biology 341 and 357 or equivalent. Topics include gene structure, gene protein relationships, transcription and translation, mutation, extra-chromosomal elements, and the regulation of gene expression. There is a substantial emphasis on the genetics of higher organisms.

554. Cytogenetics. 2 credits. Prerequisite: Biology 357 and 367 or equivalent. The cytological basis of genetics with special reference to chromosomal structure, number alterations, and their effect on inheritance and evolution.

564. Developmental Morphology of Plants. 2 credits. Prerequisite: Biology 361 or consent of instructor. Morphological development of plants with emphasis on the causal factors.

571. Advanced Biometry. 3 credits. Prerequisite: an introductory course in statistics. Advanced topics in experimental design and statistical methods with emphasis on applications in biological research.

590. Special Topics. 1 to 4 credits. Prerequisites: Graduate status or upper division status with consent of instructor. Important and current topics in biology not covered by other courses. Repeatable when topics vary. Examples include: Aquaculture, Big Game Biology, Biostatistics, Conservation Biology, Fire Ecology, Molecular Techniques, Plant-Animal Interactions, Sex Determination and Speciation.

592. Directed Studies. 1 to 4 credits. Designed to meet the needs of individual and small groups of students in areas of faculty specialization. May be repeated to a total of 12 credits.

599. Research. Credits arranged. Maximum of 15 credits per semester. Intended for students conducting original research in consultation with staff. 5/5 grading only.

312. Evolution. 3 credits.

315. Genetics. 3 credits.

322. General Ecology. 3 credits.

322L. General Ecology Lab. 1 credit.

333. Population Biology. 3 credits.

336. Systematic Botany. 4 credits.

338. Animal Behavior. 2 credits.

338L. Animal Behavior Lab. 2 credits.

341. Cell Biology. 3 credits.

341L. Cell Biology Lab. 1 credit.

363. Entomology. 4 credits.

364. Parasitology. 2 credits.

364L. Parasitology Lab. 2 credits.

369. Histology. 2 credits.

369L. Histology Lab. 2 credits.

370. Vertebrate Zoology. 3 credits.

371. Anatomy and Adaptations Laboratory. 2 credits.

373. Vertebrate Natural History. 3 credits.

375. Invertebrate Zoology. 4 credits.

378. Developmental Biology. 3 credits.

425. Ichthyology. 3 credits.

427. Ornithology. 3 credits.

428. Mammalogy. 3 credits.

431. Wildlife Management. 4 credits.

432. Fish and Wildlife Disease. 3 credits.

433. Aquatic Ecology. 3 credits.

433L. Aquatic Ecology Lab. 1 credit.

438. Fisheries Management. 3 credits.

442. Physiology of Organs and Systems. 4 credits.

450. Molecular Genetics. 2 credits.

470. Biometry. 3 credits.

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Business Administration


Program Description

The Master of Business Administration (M.B.A.) is a professional degree with a program designed to prepare persons for general management responsibilities at the executive level. The program is accredited by AACSB International (The Association to Advance Collegiate Schools of Business). The recipient of the degree must have demonstrated critical, analytical, and decision-making abilities in the broad area of management and also must have demonstrated an ability to study and write in one specialized area. The M.B.A. degree program is designed for individuals who have an undergraduate background in a field other than business, as well as for those with undergraduate training in business. The M.B.A. program is available as part of a combined program resulting in both an undergraduate degree in a business area plus an MBA degree in five years.

Admission Requirements

Admission to Approved Status requires:

1. A baccalaureate or higher degree from a regionally accredited institution. Holders of a non-U.S. three-year degree may be admitted under the combined model of admission.

2. Completion of the Graduate Management Admission Test (GMAT) with a score that equals or exceeds an overall total score of 450. Those being admitted under the combined model must complete the GMAT with a score that equals or exceeds an overall total score of 500. In certain circumstances, applicants may substitute the GRE or LSAT for the GMAT. This situation will be determined on a case-by-case basis.

3. An overall grade point average of at least 2.75 in the undergraduate degree program or of at least 3.00 for the last two years, or equivalent, of undergraduate work (based on a 4.00 scale). An overall grade point average of at least 3.0 must be achieved for students admitted under the combined model.

4. Command of the MBA Core Curriculum (see description below).

Applicants who meet the first three requirements listed above, but who have not met the course work requirements in the MBA Core Curriculum, may be admitted to Qualified Status.

Applicants who fail to meet the minimum grade point or GMAT requirements, but who otherwise show high potential for success may be considered for admission to Provisional Status, provided they meet one of the following indices:

1. A composite index score of at least 950 determined by the formula: \((\text{GMAT} + 200 \times \text{overall undergraduate GPA})\)

2. A composite index score of at least 1,000 determined by the formula: \((\text{GMAT} + 200 \times \text{(last 2 years or equivalent undergraduate GPA)})\)

Under no circumstances will applicants with GMAT scores below 400 (500 for students under the combined model) be recommended for admission. The average GMAT score of successful applicants for the five-year period beginning with the 1995-96 academic year was 525.
Composed Admission

Individuals at UND currently completing their junior year towards their business degree, or those who received a three-year degree from a non-U.S. college/university, may make application to the MBA under combined admission. For students currently completing their undergraduate degree, combined admission allows the ability to more effectively manage their course load. For prospective students holding a non-U.S. three year degree, the combined admission permits admission to the MBA without taking a year of study as a non-degree student. The MBA program under the combined admission, however, will be a minimum of two years of study.

MBA Core Curriculum

Applicants must demonstrate command of a core curriculum in business and administration through course work in economics, accounting, quantitative methods, the functional areas of business, mathematics, and administrative process. This command normally will be demonstrated by completion of the following UND undergraduate courses or their equivalents, or by competency examinations.

Accounting 275 Accounting for Pre-MBA 3 credits
ISYS 217 Fundamentals of Management Information Systems 4 credits
Economics 206 Survey of Economics Principles (MBA only) 4 credits
Economics 216 Mathematics and Statistics for the MBA 3 credits
Accounting 315 Business in the Legal Environment 3 credits
Finance 310 Principles of Financial Management 3 credits
Management 300 Principles of Management 3 credits
Management 301 Production Management 3 credits
Marketing 305 Marketing Foundations 3 credits

The above courses are described in the departmental listings covering undergraduate programs.

Accounting 275 may be satisfied by 2 semesters of Elements of Accounting
Econ 206 may be satisfied by Micro and Macroeconomics
Econ 216 may be satisfied by one semester each of Statistics and Calculus

Degree Requirements

The M.B.A. degree program is an interdisciplinary one, taught by the faculty in several departments within the College of Business and Public Administration. The M.B.A. Program Director is responsible for coordinating all aspects of the program. Business courses carrying graduate credit status from the Departments of Accounting, Economics, Finance, Information Systems, Marketing, Management, and Political Science and Public Administration are described elsewhere in this section. The M.B.A. degree program course requirements are:

1. A minimum of 32 semester credits of academic work must be completed. The gpa for all courses listed on the Program of Study must be 3.00 or better. The program includes an M.B.A. curriculum of 26 semester credits, including the Independent Study (BADM 597 — 2 credits), and sufficient cognate electives to total 32 semester hours. The M.B.A. Curriculum includes the following required courses:

   Management 501 Quantitative Analysis for Management Decisions 3 credits
   Management 505 Advanced Strategic Management 3 credits
   Management 515 Advanced Managerial Theory 3 credits
   Marketing 510 Strategic Market Planning 3 credits
   Economics 509 Macroeconomic Decision-Making 3 credits
   Accounting 509 Accounting Information for Decision and Control 3 credits
   Finance 501 Managerial Finance 3 credits
   ISYS 510 Information Systems 3 credits
   TOTAL 24 credits

2. Cognate elective courses may be chosen from those offered at the 300-, 400- and 500-level in the areas of Accounting, Economics, Finance, Information Systems, Marketing, Management, Political Science & Public Administration and related fields. A cognate may be chosen from selected courses in the aviation management area. 300- and 400-level courses taken for graduate credit must have a graduate level component included to be considered part of the Program of Study.

   All cognate elective courses and aviation management cognate courses must be approved by the M.B.A. Program Director prior to enrollment.

Students who already have completed courses similar to those in the MBA Curriculum may be required to choose substitutes from the graduate credit offerings listed in this catalog. Substitutions require the prior approval of the MBA Director and the Graduate Dean.

Final Examinations. The requirement of the final examinations for the M.B.A. degree is satisfied by the successful completion of Management 505, Advanced Strategic Management. Students must complete 12 credits of M.B.A. curriculum courses before enrolling in Management 505.

Concentration in Accounting

In order to receive a concentration in accounting, a minimum number of courses in accounting must be taken at the undergraduate level. The courses below provide the student with the necessary minimum background to pursue graduate education in accounting. Based on the advice of the MBA Director, additional courses may be recommended, depending on the individual student’s level of preparation and background.

Accounting 200 & 201 Elements of Accounting I & II 6 credits
Accounting 301 & 302 Intermediate Accounting I & II 7 credits
Accounting 309 Accounting Information Systems 3 credits
Accounting 320 Accounting for Production 3 credits
Accounting 405 Assurance Services 3 credits
Accounting 411 Business Income Taxation 3 credits

The graduate level concentration in accounting includes the following:

1. Twelve (12) credits including Accounting 509 and a minimum of nine (9) credit hours to be selected from the following accounting classes: 312, 401, 406, 410, 501 or 591, 503, 504, 507, 592.
2. Two (2) credits of Independent Study, Business Administration 597. If choosing accounting as a concentration, the Independent Study would focus on the field of accounting.

   Of the courses selected from #1 above, a maximum of six hours may be selected from undergraduate (300-499) courses. If undergraduate courses are selected, additional work is necessary for the course to qualify for graduate credit.

Concentration in International Business

This concentration consists of nine semester hours, including the six semester hours of electives comprising the 32 semester hour MBA program. The International Business Concentration requires an additional three semester hours, thus making the MBA with the concentration a total of 35 semester hours.

The concentration in International Business includes the following components:

1. UND and the respective foreign college/university must have a formal course transfer agreement in place prior to the approval of the student’s international experience.
2. Students will be admitted to the MBA program. Those students admitted under qualified status must make significant progress towards satisfying needed prerequisite courses. Approval of the MBA Director is necessary for inclusion in the International Business concentration.
3. Students will complete the first and last semesters of their program of study at UND.
4. Students will take a maximum of nine semester hours from a foreign college/university to be approved for inclusion in their program of study. Students may take additional courses, but they will not be included as part of the MBA program. Courses to be taken at the foreign college/university, and included in the program of study, must be approved by the MBA Director prior to registration.
5. Students are expected to take a workshop or course of study in cultural language studies from the foreign college/university beyond the nine semester hours of course work mentioned in #4.
6. The independent study (BADM 997) will most likely be in international business. Data or other types of information relating to the independent study may be collected during the student’s international experience.

Courses

ACCOUNTING

501. Seminar in Accounting Problems. 1 to 4 credits. Special problems in accounting and accounting research. May be repeated.
503. Accounting Theory. 3 credits. Prerequisite: satisfactory evidence of academic training or practical experience. Theory and use of accounts and accounting principles.
507. Advanced Auditing. 3 credits. Prerequisite: the same as for 503. Auditing theory and practice.
509. Accounting Information for Decision and Control. 3 credits. Management accounting concepts and their application in internal planning, control, and decision-making.
510. Industrial Quantitative Controls. 3 credits. Prerequisite: Accounting 106. The use of quantitative techniques in business decision making. Some of the topics included are probability concepts, decision theory, inventory control, and linear programming.
575. Special Topics. 3 credits. Specific topic will vary from offering to offering at the discretion of the department. Departmental permission will be required for enrollment. Prerequisites and/or corequisites may be required depending upon the special topic selected. Course may be repeated up to a total of nine credits with permission of department. Regular grading.
590. Contemporary Readings in Accounting. 2 credits. Review of outstanding monographs and other writings in the field of accounting.
591. Accounting Research. 1 to 8 credits. Individual student projects designed to develop skills in accounting research.
592. Research in Federal Tax. 1 to 4 credits. Prerequisite: Accounting 411 or equivalent. Research in Federal Income Tax with emphasis on corporations and shareholders.
306. Cost Accounting II. 3 credits.
309. Accounting Information Systems. 3 credits.
312. Fund Accounting. 3 credits.
401. Advanced Accounting. 3 credits.
403. Contemporary Accounting Theory. 3 credits.
405. Assurance Services. 3 credits.
406. Independent Assurance. 3 credits.
410. Federal Individual Income Tax. 3 credits.
411. Business Income Taxation. 3 credits.

BUSINESS ADMINISTRATION

502. Business Research Methods. 3 credits. Prerequisites: Completion of MBA foundation courses or consent of instructor. A study of the methodology of research involving research design, problem definition, information sources, data collection instruments, and the organization and writing of a research paper.
507. Graduate Cooperative Education. 1-3 credits. Prerequisites: Approved status, approval of MBA Director. A practical experience with an employer closely associated with the student’s academic area. A written report describing the student’s job-related experiences will be prepared. This course may be taken only once. S/U grading only.
509. Continuing Enrollment. Variable credit.
507. Independent Study. 2 credits. (See the Academic Policies section for details on 996 and the Degree Requirements section for 997.)

BUSINESS LAW

593. Research in Business Law. 1 to 4 credits. Individual projects designed to develop basic skills in legal research.
416. Advanced Business Law. 3 credits.

ECONOMICS

504. Advanced Price Theory. 3 credits. Prerequisite: Economics 308. Economic theory and methodology; theory of consumer behavior and demand; theory of production and distribution; equilibrium in commodity and factor markets; general equilibrium and welfare; behavior of economic agents in imperfect competition. Particular attention is given to efficiency and equity ramifications of perfectly competitive economic systems.
505. Advanced Macroeconomic Theory. 3 credits. Prerequisite: Economics 309. Advanced study of macroeconomic theoretical models with particular attention to the analysis of business cycles, income growth, and evaluation of public policies concerned with inflation and unemployment.
509. Macroeconomic Decision-Making. 3 credits. Prerequisite: Economics 202. Examination and utilization of theory and empirical evidence on macroeconomics in the business decision-making process will be stressed. Particular emphasis will be placed on inflation, interest rate changes, business taxation, and exchange rate movements.
511. Advanced Business and Economic Forecasting. 3 credits. Prerequisite: Economics 310. Various time series and regression approaches as well as special topics are covered in conjunction with computer-based assignments. Specific topics and diagnostic techniques are emphasized for both forecasting and simulation.
514. Advanced Managerial Economics. 3 credits. Prerequisite: Economics 201. ISys 217 and Math 146, or permission of the instructor. Microeconomic analysis applied to business decision making. Topics include: estimation of demand, production and cost functions; pricing to achieve the firm’s objectives under a variety of market conditions; quantitative analysis is stressed and use of the personal computer and appropriate software is an integral part of the course.
530. Seminar in International Economics. 3 credits. Prerequisites: Economics 309 and Economics 330 or consent of instructor. Topics to be discussed include: Advanced Theory Underlying International Trade; Balance of Payments; International Monetary System. Detailed examination of disequilibria, adjustments and coordination of external and internal monetary and fiscal policies in those areas; Multinational corporations; world trade, New International Economic Order (NIEO) and trade.
550. Seminar on the Economics of Regulation. 3 credits. Prerequisites: Economics 308 or Econ 514 or Econ 504, or permission of the instructor. Journal articles in regulatory economics will be discussed in a seminar format. Key components of the course include: the foundation for utility regulation; determining the cost of capital; the importance of cost and demand factors in rate design; energy conservation; and alternatives to rate-of-return regulation.
557. Advanced Special Topics. 2 to 4 credits. Specific area varies from year to year; some years an important aspect of economic theory; other years, a significant issue in economic policy.
592. Research in Economics. 2 to 3 credits. Research work and use of original documents; collecting of material and preparing of special topics and bibliographies; familiarizing the student with government publications and other material available for study of economic problems.
597. Readings in Economics. 3 to 6 credits. Extensive readings to cover areas in which a student’s background may be deficient or in areas of specialization or interest; conferences with the instructor, written reports.

Courses Listed below are described in the undergraduate section of this catalog, and may be taken by MA students who did not take them as undergraduates. MA students taking these courses are expected to perform at a higher level, both in the quality and quantity of work.

324. Public Finance. 3 credits.
331. Comparative Economic Systems. 3 credits.
338. International Economics. 3 credits.
341. Labor Economics and Labor Relations. 3 credits.
355. Government Regulation of Business. 3 credits.
460. History of Economic Thought. 3 credits.
464. Mathematics for Economists. 3 credits.
483. International Money and Finance. 3 credits.

FINANCE

501. Managerial Finance. 3 credits. Prerequisite: Finance 310. The development of financial decision-making skills, using the case-analysis method, through the application of financial theory and methods, with an emphasis on the use of statistical techniques to analyze financial data.
506. Investment Theory and Management. 3 credits. Prerequisites: Finance 501 or consent of instructor. An introduction to investment analysis, designed for MBA students in the study of the usage and valuation of the major investment vehicles popular today. Although the ultimate objective is to develop a conceptual framework in which the student can expand his or her knowledge of the investment field, the course is taught in a practical fashion and incorporates materials from both the Chartered Financial Analyst (CFA) and Certified Financial Planner (CFP) curricula.
525. Special Topics. 3 credits. Specific topic will vary from offering to offering at the discretion of the department. Departmental permission will be required for enrollment.
420. Investment Analysis and Portfolio Management. 3 credits.
MANAGEMENT

501. Quantitative Analysis for Management Decisions. 3 credits. Course consists of an application of quantitative techniques for management decisions. Both mathematical techniques and computer analysis of decisions will be stressed. Topics will include deterministic and probabilistic models in areas such as linear and quadratic programming, inventory systems, queuing models, game theory, and simulation.

505. Advanced Strategic Management. 3 credits. Prerequisite: 12 credits of M.B.A. core courses or consent of instructor. An integrating course designed to develop coordinating ability and experience in the decision-making process. Taught from the point of view of the top management and by the case method, the course develops understanding of an overall point of view, through analysis of actual business situations, and appreciation of the relations of the production department to other departments and to the business as a whole. Concluding cases place emphasis on the responsibilities of business enterprise to the community and to society generally.

515. Advanced Managerial Theory. 3 credits. Prerequisite: Management 300 or consent of instructor and graduate standing. Analysis of macro- and micro-behavioral approaches to the study of effective human resource management within the organization. Topics covered include the environment, the individual, small group, leadership, motivation, job design, evaluation, rewards and growth. Micro-behavioral topics such as organizational design, climate, and organizational process are also covered as these relate to human behavior in organizations.

575. Special Topics. 3 credits. Specific topic will vary from offering to offering at the discretion of the department. Departmental permission will be required for enrollment. Prerequisites and/or corequisites may be required depending upon the special topic selected. Course may be repeated up to a total of 9 credits with permission of department.

596. Individual Research. 2 to 4 credits.

597. Readings in Management. 3 credits.

400. Organizational Theory and Analysis. 3 credits.

407. Wage and Salary Administration. 3 credits.

408. Issues in Human Resource Management. 3 credits.

409. Union-Management Relations. 3 credits.

420. Multinational Management. 3 credits.

INFORMATION SYSTEMS

510. Information Systems. 3 credits. Prerequisite: Bsys 217. An overview of the role of information systems in the life of an organization, and an overview of current and emerging technologies such as data communications, e-commerce, and data mining.

MARKETING

514. Strategic Market Planning. 3 credits. Prerequisite: Marketing 305. Marketing from the point of view of an executive charged with the marketing function in a business enterprise. The course introduces students to marketing decision making using computerized decision support systems. Students will also work with existing or prospective business in developing a comprehensive marketing plan.

511. Seminar in Marketing. 2 to 6 credits.

512. Promotional Strategy. 3 credits. Prerequisite: Marketing 305. The analysis, planning, and evaluation of promotion strategy. Examines various kinds of communication about goods and services including advertising, personal selling, sales promotion, and publicity. On demand.

540. Marketing Seminar. 3 credits. Prerequisite: Marketing 305. Emerging topics in the field of marketing. On demand.

575. Special Topics. 3 credits. Specific topic will vary from offering to offering at the discretion of the department. Departmental permission will be required for enrollment. Prerequisites and/or corequisites may be required depending upon the special topic selected. Course may be repeated up to a total of 9 credits with permission of department.

596. Graduate Research in Marketing. 1 to 3 credits. Prerequisites: BADM 502 and consent of instructor. Repeatable to 6. Prerequisite: Consent of instructor.

425. Current Perspectives in Global Marketing. 3 credits.

Career and Technical Education

Professors Braathen, Lawson-Body and O’Keefe, (Chair)

Program Description

The M.S. in Career and Technical Education is designed to provide a master’s degree for educators in all service areas of Career and Technical Education. The latest issues and trends in Career and Technical Education will be incorporated into the curriculum. Courses will provide general information about Career and Technical Education as well as specific concentrations in each of the service areas.

Admission Requirements

1. A minimum of 20 semester hours of undergraduate course work in an area related to Career and Technical Education, e.g., business education, marketing education, agriculture, special populations, counseling and guidance, industrial technology, etc.

2. At least one year of successful teaching experience or one year of successful occupational experience equivalent to Career and Technical Education certification requirements of the North Dakota State Board for Vocational Technical Education.

Degree Requirements

1. Major must include courses in career and technical education and an independent study.

2. A minimum of 32 semester credits including 9 semester credits for approved minor or cognate courses.

3. Independent Study. The independent study is designed to require the student to independently investigate a topic related to the major field. The study need not be an original contribution to knowledge but may be a presentation, analysis, and discussion of ideas already in the literature of the field. The requirement is to ensure that the student can investigate a topic and organize a scholarly report on the subject.

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Career and Technical Education

Professors Braathen, Lawson-Body and O’Keefe, (Chair)

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Chemical Engineering

Professors Erjavec (Chair), Kolodka, Mann, Muggli and Seames

Adjunct Professors Benson, Hurley and Olson

Program Description

The Department of Chemical Engineering offers graduate programs leading to the degrees of Master of Science, with thesis and non-thesis options, and the Master of Engineering. The department also participates in the multi-disciplinary Engineering Ph.D. program and the multi-disciplinary Environmental Engineering master’s program. The M.S. or M.Eng. degree can be completed in 15–24 months of full-time study by a student holding an accredited baccalaureate degree in chemical engineering. It has been common for students holding baccalaureate degrees with majors in chemistry to apply, enroll, and successfully complete requirements for the M.S. degree with a major in chemical engineering. The Department of Chemical Engineering also offers a combined Bachelor of Science in Chemical Engineering (BSChE)/Master of Science (with a major in chemical engineering) and BSChE/Master of Engineering (MEng) degrees. The intention of the combined BSChE/M.S. and the combined BSChE/MEng programs is to allow qualified students to complete requirements for both degrees in one year beyond that which is required to receive the baccalaureate degree.

Research interests in the department include energy processes and technology, biochemical processes, trace metal removal and control processes, environmental catalysis, process modeling, control and automation, polymer synthesis and characterization, and engineering statistics. Research projects are often done in collaboration with the Energy and Environmental Research Center (EERC), which has extensive analytic, laboratory, and pilot plant facilities.

Admission Requirements

Master of Science

1. B.S. degree in chemical engineering from an ABET accredited program.* See “Combined Degree Program” under the School of Engineering and Mines section for additional details. (Students holding a B.S. degree in a science field may be admitted to Qualified Status with an obligation to acquire a background in chem. engineering.)

2. An overall undergraduate GPA of at least 2.75 or a GPA of at least 3.00 for the last two years. (An overall GPA of at least 3.3 for the combined BSChE/MS degree is required.)

3. Graduate Record Examination General Test for those with undergraduate degrees from other than ABET accredited programs.

Master of Engineering

1. B.S. degree in Chemical Engineering from an ABET accredited program.*

2. Overall GPA of at least 2.50 or a GPA of at least 3.00 for the last two years. (An overall GPA of at least 3.0 for the BSChE/MEng degree is required.)

*Students applying for the combined BSChE/MS or BSChE/ MEng degrees can do this the semester before the BSChE degree would be awarded.

Degree Requirements*

Master of Science

There are no specific departmental degree requirements beyond those required for the Master of Science degree.

Master of Engineering

1. Thirty credits (30) with at least 15 credits of chemical engineering at the 500-level.

2. Fifteen (15) credits in engineering design, including either Chemical Engineering 511 or 512, Engineering 595 (3 credits), and nine credits selected from approved engineering design courses.

3. At least 15 credits of basic and engineering science, including at least 3 credits of chemistry, 3 credits of chemical engineering, 3 credits of mathematics, and 3 credits of chemistry, chemical engineering, or mathematics.

*All requirements of the BSChE degree and all requirements for the respective master’s degree must be met.

Courses

501. Advanced Transport Phenomena 3 credits. Prerequisite: Che 301 and Math 265. This course is designed to give an advanced treatment of momentum, heat, and mass transfer suitable for graduate students in chemical engineering, mechanical engineering, and environmental engineering. This course will involve using advanced mathematics to model transport systems of importance in engineering science and design.

503. Fuels Technology 3 credits. 3 to 6 hours. Processing and utilization of low rank fuels.

504. Air Pollution Control 3 credits. Background equivalent to Chem 122, Math 265, and Physics 252 is expected. Identification of major air pollutants from stationary and mobile sources and methods of controlling their emissions; dispersion of air pollutants in the atmosphere; photochemical air pollution; federal and state regulations.

507. Advanced Unit Operations 3 to 6 credits. Background equivalent to CHE 405 is expected. One or more of the following: fluid flow, heat flow, evaporation, humidification and dehumidification, drying, gas absorption, distillation, and extraction.

508. Advanced Unit Operations 3 to 6 credits. Continuation of the first semester’s work in advanced unit operations.

509. Advanced Chemical Engineering Thermodynamics 3 credits. Background equivalent to CHE 403 is expected. Chemical Engineering processes from the standpoint of quantitative thermodynamics. Special emphasis on thermodynamics of chemical reactions.

510. Advanced Chemical Process Control 3 credits. Prerequisites: Math 266, CHE 408 or equivalents. Analysis and design of advanced chemical process control systems including: dead time compensation, feed forward and adaptive control, multivariable control, digital computer control and the use of Z-transforms to get the discrete-time dynamic response of chemical process systems.


515. Design of Engineering Experiments 3 credits. Prerequisite: Math 265. Design and analysis of experimental data including block and factorial arrangements, significance of data, and mathematical modeling.

562. Seminar in Chemical Engineering 1 credit. Conferences and reports on current developments in Chemical Engineering. S/U grading only.
Chemistry

Professors Abrahamson (Chair), Ballintine, Banerjee, Hoffmann, Kozliak, Pierce, Shay, Smoliakova, Stahl, Thomasson and Tilotta

Program Description

The department of Chemistry offers graduate programs leading to the degrees of Master of Science and Doctor of Philosophy with majors in inorganic chemistry, organic chemistry, physical chemistry, and analytical chemistry. The department offers a B.S./M.S. program (using the non-thesis M.S. option) for students who meet the admission criteria listed below.


All students beginning graduate work in chemistry must take orientation-diagnostic examinations over the fields of inorganic, organic, physical, and analytical chemistry during the week preceding their first registration. These examinations are used to determine the course level at which students begin their work.

Admission Requirements

Master of Science

(Non-thesis option)

1. An ACS approved baccalaureate degree in chemistry.
2. Satisfactory performance on an eligibility examination given by the Department. Normally, this examination is taken prior to registration for final undergraduate year.
3. Chemistry 488 (Undergraduate Seminar) or equivalent.
4. Chemistry 455 (Spectroscopy and Structure) or equivalent.
5. Chemistry 492 (Senior Research) or equivalent.
6. Nine credits of Graduate-level Chemistry courses. Note that the subject matter of these courses will restrict the range of possibilities of specialization, i.e., Analytical, Inorganic, Organic, Physical) for the graduate degree.

Doctor of Philosophy

(Thesis option)

1. A baccalaureate degree with a major in chemistry.
2. Undergraduate credit in mathematics through integral calculus.
3. One year of physics.
4. Graduate Record Examination General and Advanced Chemistry tests for students with degrees from foreign institutions.
5. Students with a bachelor’s degree may be directly admitted to the Ph.D. program.

Degree Requirements

Master of Science

(Non-thesis option*)

Degree Requirements (32 credits total):

1. 12 credits from Chem 510, 511, 512, 520, 521, 522, 530, 531, 532, 534, 540, 541, 542, and 543. At least 3 credits must be from student’s division (i.e., Analytic, Inorganic, Organic, Physical).
2. 1 credit of Chem 509 (Seminar).
3. 6 credits of Electives (taken from courses listed in Graduate Catalog)
4. 2 credits of Chem 997 (Independent Study Report). Preparation of a written independent study and oral presentation of results to the advisor and interested faculty are required for successful completion of this course.
5. Either:
   (a) Co-op track 8 credits Chem 537 Graduate Cooperative Education
   3 credits Chem 599 (Research)
   or
   (b) Research track 11 credits Chem 599 (Research)
6. A written Comprehensive Examination in analytical, inorganic, organic, and physical chemistry will be taken at the beginning and/or end of the final semester in residence. Students will be required to pass the nationally-normed ACS exam in their major area at a proficient level and pass all other exams at a competent level.
*Applicable only to students admitted under the non-thesis option. No switch from a thesis option is possible.

Doctor of Philosophy Degree

The degree of Doctor of Philosophy with a major in chemistry is a research degree and is conferred only in recognition of high achievement in independent scientific research and scholarship. A candidate for the Ph.D. degree with a major in chemistry must complete a research problem in one of the four fields of chemistry. The scope of the doctoral dissertation will be such as to require the equivalent of at least one full-time academic year of research. Some doctoral research will require a substantially longer time. This research is expected to make a significant contribution to the candidate’s chosen field of chemistry. When the major professor decides that the candidate has satisfactorily completed the research problem, the candidate, in accordance with the regulations of the University, is required to prepare a dissertation covering the research.

1. Chemistry 509 (two credit hours).
2. Nine (9) credit hours of 500-level courses from major sequence (Analytical: 540 and six hours selected from 541, 542, or 543; Inorganic: 510, 511, 512; Organic: 520, 521, 522; Physical: 530, 531, 532).
3. Twelve (12) credit hours of elective courses (at least nine must be in 500-level Chemistry courses; six of these nine must be taken in two divisions other than the major).
Civil Engineering

Professors Gullicks, Jerah, Mamaghani, Moretti (Chair) and Suleiman

Program Description

The Department of Civil Engineering offers graduate programs leading to the Master of Engineering degree and the Master of Science degree. The Master of Engineering degree permits specialization in the following options: Soils-Structures, Environmental-Water Resources, and General Civil Engineering. The Master of Engineering degree program is designed to provide an opportunity for engineers to achieve formal education beyond the Baccalaureate level with a strong and directed emphasis toward the practice of engineering. The focus of the program is on the development of competency in the area of engineering design. The goal of the program is development of the student as a practitioner capable of systematically solving complex problems of society within his or her field.

The department offers a combined Bachelor of Science in Civil Engineering/Master of Engineering degree program. The intention of the combined program is to allow qualified students to complete requirements for both a baccalaureate degree and a master’s degree in one year beyond the time required to complete the baccalaureate degree. See Combined Degree Program under the School of Engineering and Mines section for additional details.

The Department of Civil Engineering also participates in an interdisciplinary Ph.D. Engineering Program. For information please contact the Civil Engineering Department.

Admission Requirements for Master of Engineering program

1. Bachelor of Science degree in Civil Engineering from an ABET accredited or equivalent program.
2. Graduate Record Examination General Test for applicants from non-ABET accredited programs.

Admission Requirements for Master of Science program in Civil Engineering

1. Minimum general admission requirements in the Admission section of the Graduate catalog.
2. A baccalaureate degree in engineering or science from a recognized college or university.
3. Graduate Record Examination scores on the General Test will be required for those holding undergraduate degrees from other than ABET-accredited programs.

Degree Requirements for Master of Engineering program

1. Total of thirty (30) credit hours.
2. a) Soils-Structures option requires CIEN 501, CIEN 502 and ME 529.
   b) Environmental-Water Resources option requires CIEN 531, CIEN 532, and CIEN 533.
   c) General Civil option requires CIEN 501, CIEN 523 and CIEN 531.
   d) Each option requires six (6) credit hours of Engr 595.
3. The remaining fifteen (15) credit hours of electives are chosen from 300, 400 or 500 level engineering, physical sciences, life sciences, computer science, and mathematics.
Degree Requirements for Master of Science Program

Degree requirements will be listed for the M.S. degree, both for the thesis option and the non-thesis option. There are no specific departmental degree requirements beyond those listed in the catalog for the M.S. degree.

Courses


502. Structural Stability 3 credits. Prerequisite: Engr 203. Stability of columns, beam-columns and frames, inelastic buckling, critical loads by the energy method, torsional buckling, buckling of rings and curved bars.


523. Applied Hydraulics 3 credits repeatable to 9 when topics vary. Prerequisite: CIEN 423. Study of advanced topics in hydraulics. Computer applications. Content will vary.

524. Open Channel Hydraulics 3 credits. Prerequisite: CIEN 306. Study of advanced topics in open channel hydraulics. Computer applications.

531. Environmental Engineering III 3 credits. Prerequisite: CIEN 431. Unit Operation and process design for water and wastewater treatment; physical, chemical, and biological systems; plant design project, computer-assigned design analysis.

532. Environmental Engineering IV 3 credits. Prerequisite: CIEN 431. Advanced theory and special methods in municipal and industrial wastewater treatment including treatment plant control, equipment studies, nutrient removal, tertiary treatment and toxic pollutants control.

533. Industrial Wastes 3 credits. Prerequisite: CIEN 431. Industrial processes and waste characterization, regulatory law, specialized treatment systems, hazardous wastes, economic analysis; plant tours of potato, sugar, meat, dairy, paper, pulp products and metal plating industries.


551. Plate and Slab Structures 3 credits. Prerequisites: Engr 203 and CIEN 351. Classical plate bending theory, rectangular and circular plates, slab analysis by energy and numerical methods, anisotropic plates, large deflection theory, buckling of thin plates.

552. Thin Shell Structures 3 credits. Prerequisites: Engr 203 and CIEN 351. Differential geometry of shell theory, membrane and bending theories of shells, shells of revolution, stress analysis of domes, pressure vessels, and storage tanks; numerical methods, buckling of shells.

553. Prestressed Concrete—Analysis and Design 3 credits. Prerequisite: CIEN 453. Materials and methods of prestressing, loss of prestress, flexural design by service-load and ultimate-strength methods, anchorage zone stresses, shear and torsion design.


590. Special Topics: Credit arranged. Prerequisite: Department approval. Investigation of special topics dictated by student and faculty interest. May be repeated up to a total of 6 credits.

591. Civil Engineering Research: Credit arranged. May be repeated to a maximum of 12 credits.

595. Design Project: 3 to 6 credits. Prerequisite: Restricted to the Master of Engineering student candidates and subject to approval by the student’s advisor. A three to six credit course of engineering design experience involving individual effort and formal written report. S/U grading only.

434. Environmental Engineering Lab. 4 credits.

452. Timber Engineering 3 credits.

Clinical Laboratory Science

Professors Bruce (Graduate Director), Coleman, Larson and Paur

http://www.med.und.nodak.edu/depts/cls

Program Description

The Division of Medical Laboratory Science offers a graduate program leading to the Master of Science Degree in Clinical Laboratory Science (CLS), non-thesis option. The course of study enhances the student’s knowledge and skills in several major categorical areas of clinical laboratory science. The curriculum is designed to prepare students for careers as administrative laboratory directors, clinical laboratory consultants, technical supervisors or laboratory educators. Students are required to attend three one-week laboratory courses and a one-week capstone course.

The program is offered both on campus and through distance learning. The primary method of distance learning course delivery is WEB based and/or CD. Because of this, students are required to have access to the Internet. Specific computer requirements are available from the DL program. A limited number of teaching and research assistantships are available for students wishing to study on campus.

Admission Requirements

1. General requirements for admission to the UND Graduate School.
2. B.A. or B.S. degree and successful achievement in the CLS (NCA), in the MT (ASCP), or equivalent certification examinations.
3. Experience in a medical laboratory prior to admission is recommended.

Degree Requirements

1. A minimum of 32 semester credits.
2. Major area is 26 credits in the clinical laboratory sciences.
3. A cognate area of study or minor (minimum of 9 credits) is optional.
4. The required core is as follows:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLS 501</td>
<td>Quality Assurance in the Clinical Laboratory</td>
<td>2 cr</td>
</tr>
<tr>
<td>CLS 502</td>
<td>Erythrocytes in Health and Disease</td>
<td>2 cr</td>
</tr>
<tr>
<td>CLS 503</td>
<td>Leukocytes in Health and Disease</td>
<td>2 cr</td>
</tr>
<tr>
<td>CLS 504</td>
<td>Medical Microbiology for Laboratory Professionals</td>
<td>2 cr</td>
</tr>
<tr>
<td>CLS 505</td>
<td>Financial Management of the Clinical Lab.</td>
<td>2 cr</td>
</tr>
<tr>
<td>CLS 506</td>
<td>Clinical Chemistry</td>
<td>2 cr</td>
</tr>
<tr>
<td>CLS 507</td>
<td>Clinical Immunohematology</td>
<td>2 cr</td>
</tr>
<tr>
<td>CLS 510*</td>
<td>Erythrocytes in Health and Disease (Laboratory)</td>
<td>1 cr</td>
</tr>
<tr>
<td>CLS 511*</td>
<td>Leukocytes in Health and Disease (Laboratory)</td>
<td>1 cr</td>
</tr>
<tr>
<td>CLS 512*</td>
<td>Immunohematology (Laboratory)</td>
<td>1 cr</td>
</tr>
<tr>
<td>CLS 513</td>
<td>Adv. Clinical Immunology for Lab. Professionals</td>
<td>2 cr</td>
</tr>
<tr>
<td>CLS 514</td>
<td>Computer Applications in Clinical Laboratory Science (CLS)</td>
<td>1 cr</td>
</tr>
<tr>
<td>CLS 515*</td>
<td>Capstone Course in Clinical Laboratory Science</td>
<td>2 cr</td>
</tr>
<tr>
<td>CLS 521</td>
<td>Seminar</td>
<td>1 cr</td>
</tr>
<tr>
<td>CLS 591</td>
<td>Directed Studies</td>
<td>2 cr</td>
</tr>
<tr>
<td>CLS 997</td>
<td>Independent Study</td>
<td>2 cr</td>
</tr>
<tr>
<td>MGMT 305**</td>
<td>Managerial Concepts</td>
<td>3 cr</td>
</tr>
</tbody>
</table>

*Not available by Distance Learning
**The requirement for the major is CLS 505 and/or a manage ment course such as MGMT 305.

Clinical Laboratory Science Management Certificate

Certificate Description

The Certificate in Clinical Laboratory Science (CLS) Management provides advanced skills to practicing laboratory professionals in health administration, leadership, conflict management, quality assurance and health informatics. The program is offered by distance learning or on campus. The method of course delivery is WEB based and/or CD. Because of this, students are required to have access to the Internet. Specific computer requirements are available from the CLS program.

Admission Requirements:

1. B.A. or B.S. degree in a science discipline
2. Minimum 2.5 GPA in undergraduate coursework
3. Work experience and/or a desire to work in the CLS field
Course Requirements:

- **CLS 501** Quality Assurance in the Clinical Laboratory 2 cr
- **CLS 505** Financial Management of the Clinical Laboratory 2 cr
- **CLS 508** Leadership and Conflict Resolution in the Health Sciences 2 cr
- **CLS 514** Computer Applications in Clinical Laboratory Science 1 cr
- **POL S 551** Health Administration and Organization 3 cr

All courses taken may be applied to the Master of Science in Clinical Laboratory Science degree.

Courses

- **CLS 501. Quality Assurance in the Clinical Laboratory.** 2 credits. The course will consist of lectures, readings and case studies of quality assurance for the clinical laboratory.
- **CLS 502. Erythrocytes in Health and Disease.** 2 credits. This course is the study of the erythrocyte. It includes discussions of the normal red cells with emphasis on molecular structure, molecular function, production and regulation. The course continues with studies of the molecular basis of the diseases of the erythrocyte. The role of the laboratory in the diagnosis of these conditions is stressed and current research tools are included.
- **CLS 503. Leukocytes in Health and Disease.** 2 credits. This course presents the normal and abnormal structure and function of each of the peripheral blood leukocytes. Emphasis is on the molecular level, light and electron microscopic evaluation and the role of the laboratory in diagnosis of each condition.
- **POLS 501. Medical Microbiology for Laboratory Professionals.** 2 credits. This course will cover the study of human pathogenic microbes including bacteriology, parasitology, virology, mycology and antemicrobials. The information presented will include beginning and advanced knowledge and identification techniques.
- **CLS 505. Financial Management of the Clinical Laboratory.** 2 credits. This course presents an overview for financial management of clinical laboratories. Students learn several basic financial operation concepts, how to evaluate productivity and how to manage salaries, wages and supply inventories for maximum cost containment. Students learn how to plan for capital expenditures, set laboratory fee rates and plan and implement a balanced budget.
- **CLS 506. Clinical Chemistry.** 2 cr. This course addresses the complex and difficult problems that have arisen as a byproduct of the effort to make effective use of the resources of analytical chemistry in support of the practice of medicine.
- **CLS 507. Immunohematology.** 2 credits. A detailed study of the blood groups of man and laboratory aspects of blood banking with special reference to theoretical and clinical applications.
- **CLS 508. Leadership and Conflict Resolution in the Health Sciences.** 2 credits. The course will provide basic and advanced training in becoming an effective leader in health service professions. Students will learn emotional intelligence skills that support leadership, how to mediate conflict through a transformative process, and problem solving facilitation techniques. In addition, students will learn how to apply these new skills for more effective living.
- **CLS 509. Erythrocytes in Health and Disease Laboratory.** 1 credit. Laboratory evaluation of disorders of erythrocytes are presented using a case study approach. Blood and bone marrow smears are provided for morphologic study. Selected special stains and procedures are performed and discussed.
- **CLS 510. Leukocytes in Health and Disease Laboratory.** 1 credit. This course is the study of the leukocyte. It includes discussions of the normal white cells with emphasis on molecular structure, molecular function, production and regulation. The course continues with studies of the molecular basis of the disease of the leukocyte. The role of the laboratory in the diagnosis of these conditions is stressed and current research tools are included.
- **CLS 511. Immunohematology Laboratory.** 1 credit. This lecture/laboratory course is intended for beginners or experienced medical technologists desiring a refresher course in immunohematology. The curriculum includes resolving ABO discrepancies, utilizing enhancement techniques for antibody identification, solving problems in compatibility testing, determining neonatal and obstetrical transfusion practices, and identifying new trends in blood banking. It is designed as a one week course with 40 contact hours including 10 hours of lecture and 30 hours of laboratory.
- **CLS 512. Advanced Clinical Immunology for Laboratory Professionals.** 2 credits. Prerequisites: Consent of Instructor. Broad array of topics which will stretch from introductory level immunology to the current research and applications of that research in the modern clinical laboratory.
- **CLS 513. Computer Applications in Clinical Laboratory Science.** 1 credit. This course is designed to provide students with basic knowledge of computer usage in Health Sciences. It will address computer hardware configuration, software applications in healthcare and on-line searching and periodicals. Instruction will be primarily on-line and require specific computer requirements.
- **CLS 514. Capstone Course in Clinical Laboratory Science.** 2 credits. Prerequisites: Completion of at least 20 credits in the Clinical Laboratory Science Master of Science Program. The Capstone Course in Clinical Laboratory Science (CLS) provides the student with a number of tools that they can use in their leadership roles in the CLS profession. The student will learn basic facilitation skills for leading meetings and solving problems in the work place. The student will develop their own professional Web page and learn how to create Web pages for their business or place of employment. They will learn about important computer applications such as Visual Basic, Excel and Power Point. The student will learn about informatics in the health sciences including applications of Internet use, Streaming Technology and Blackboard Teaching software.

516. Special Topics 1 to 4 credits. Topical courses in laboratory medicine organized on a semester by semester basis.

521. Seminar 1 credit.

591. Directed Study in Laboratory Medicine 1 credit. Prerequisite: Consent of instructor. Designed to meet the needs of individual students in laboratory medicine. Primarily for graduate students.

997. Independent Study 2 credits. The independent study is designed to require the student independently to investigate a topic related to the major field of study.

Communication

Professors Fiorio, Ganje, Han Youn, Hikins (Graduate Director), Holden, Nitz, Rakow, Rendahl (Director), Shafer and Zacher

The School of Communication offers graduate programs leading to the Master of Arts and the Doctor of Philosophy degrees. The Masters program in communication strikes a purposeful balance between specialization and integration among the various approaches to the study of human communication. The Ph.D. program in communication and public discourse provides the opportunity for specialized study in various aspects of public communication as it affects the public sphere. Both the Masters and Ph.D. programs provide a flexible array of advanced coursework and intensive research. For Ph.D. students, the program culminates in the doctoral dissertation. Both the Masters and Ph.D. programs offer the opportunity for students to develop a broad range of professional and scholarly competencies. The Masters program expands the professional options for graduates as well as prepares them for more advanced study. The Ph.D. program prepares graduates for positions in the academy, industry, and government. The student’s plan of study is prepared and directed in cooperation with the student’s advisor and faculty committee.

Application Procedures

Applications are accepted at any point in the year and students may enter the Masters or Ph.D. program at the beginning of the semester immediately following approval of their application. Students apply to either program by requesting an Application for Graduate Admission from the University of North Dakota Graduate School: The Graduate School University of North Dakota P. O. Box 8178 Grand Forks, North Dakota 58202-8178 Telephone: 701.777.2784 FAX: 701.777.3619 undgrad@mail.und.nodak.edu

A complete application for admission to the Masters program in Communication includes:

- Graduate Record Examination General Test.
- Completion of the equivalent of 20 undergraduate credits in speech communication and/or mass communication, or related field, including at least 12 upper division credits.
- Minimum 3.0 undergraduate Grade Point Average is preferred.

A complete application for the Ph.D. program in Communication and Public Discourse includes:

- Statement of interest, including personal goals and the relevance of the Ph.D. in Communication and Public Discourse to those goals.
- Original academic paper, 10-15 pages in length, reflecting the student’s ability to articulate and synthesize ideas.
- Three letters of recommendation from sources familiar with the applicant’s potential as a doctoral student in Communication.
Degree Requirements

Master of Arts

1. COMM 500 (Graduate Studies in Communication), COMM 501 (Theories of Communication), and COMM 502 (Research Methods in Communication).
2. A minimum of 30 credits in communication for the thesis option or 32 credits for the non-thesis option if a minor or cognate is not chosen.
3. If a minor or cognate is approved by the student’s advisory committee, 30 credits are necessary for the thesis option or 32 credits for a non-thesis option. A minor or cognate option will include a major with a minimum of 20 credits in communication and a minimum of 9 credits in a minor or cognate.
4. Written and oral final examinations are administered to Masters candidates. Thesis option Masters candidates will defend their theses in the final oral examination. Non-thesis-option Masters candidates will be expected to defend orally independent study reports and two term papers or projects completed in any course on their program of study. Both thesis and non-thesis candidates are administered written comprehensive examinations after the completion of 18 hours of graduate credit. The Director of Graduate Studies appoints three-person examining committees from the Graduate Faculty, normally drawn from the School of Communication, and chaired by the student’s advisor to conduct the final oral examination for non-thesis students.

Doctor of Philosophy

1. Masters degree in communication or related discipline 30 cr
2. Core Requirements, including: 9 cr
   a. COMM 500 (Graduate Studies in Communication)
   b. COMM 501 (Theories of Communication)
   c. COMM 502 (Research Methods on Communication)
3. Theory Requirements, including: 9 cr
   a. COMM 508 (Rhetorical and Communication Theory)
   b. COMM 509 (Media and Mass Communication Theory)
   c. Theory Course, selected from a menu of options
4. Scholarly Tools Requirements, including: 9 cr
   a. COMM 510 (Advanced Research Methods in Communication, offered alternatively with a focus on quantitative or qualitative methods)
   b. Interdisciplinary Qualitative Tools, including one course selected from a menu of options
   c. Interdisciplinary Quantitative Tools, including one course selected from a menu of options
5. Major Area Courses, including three courses, with up to one course outside Communication 9 cr
6. Elective Courses, including three courses, with up to one course outside communication 9 cr
7. Comprehensive Examinations, taken over the student’s first 36 credit hours of coursework as a Ph.D. student.
8. Dissertation 15 cr

TOTAL 90 cr

Courses

500. Graduate Studies in Communication 1 credit. An overview of the study of communication emphasizing the differences between graduate and undergraduate studies. To develop a common core of knowledge for beginning graduate students, the course introduces students to the history of the communication field, current issues in communication studies and the future of communication.

501. Theories of Communication 3 credits. Theory and model construction in communication with special attention to selected theories of speech communication and mass communication.

502. Research Methods in Communication 3 credits. Study of the methodologies of experimental, descriptive, survey and experimental research in the Communication discipline, with a focus on current debates and contemporary research methods.

504. Semiotics and Visual Communication 3 credits. Application of visual communication theories to the analysis, interpretation, and critical assessment of media images.

507. Communication, Technology, and Media 3 credits. An examination of the role of media technologies in shaping communication processes and of the way societies respond to technological change. Covers issues such as emerging digital technologies, technological determinism, technology transfer, access, and cost.

508. Rhetorical and Communication Theory 3 credits. Prerequisite: Admission to Ph.D. program or consent of instructor. Surveys the principal rhetorical and communication theories associated with the communication subdisciplines of rhetoric and interpersonal communication with special emphasis on definitional and modeling issues.

509. Media and Mass Communication Theory 3 credits. Prerequisite: Admission to Ph.D. program or consent of instructor. Examination of contemporary theories in mass communication and media studies, beginning with the mass society paradigm and ending with postmodern media studies.

510. Research Methods in Communication 3 credits. Prerequisite: Admission to Ph.D. program or consent of instructor. Discussion of principal theories and models in the Communication discipline, with a focus on current debates and contemporary research methods.

512. Law and Ethics in Communication 3 credits. Application of principles of law and ethics to diverse communication and mediated contexts. Covers issues such as right, wrong, goodness, and evil as well as copyright, confidentiality, privacy, and trial level remedies.

520. Criticism and Communication 3 credits. A study of various methods of criticism applied to several types of communication including public communication, film, electronic media, and print media.

521. Perspectives on Media Writing 3 credits. An analysis of historical and technological developments in contemporary media writing styles and content and a critical analysis of the cultural content of media writing with regard to serving diverse audiences with targeted messages. Examines the intended and real effects of persuasive forms of writing on intended audiences, including writing with print and broadcast. Students write in a variety of media styles to improve their own media writing skills.

525. Interpersonal Relations and Communication 3 credits. Face-to-face and mediated transactions between two people or small groups in diverse settings. Deals with inquiry, conflict management, interpersonal sensitivity, individuality, and conformity.

530. Gender, Culture, and Communication 3 credits. An examination of how males and females from different cultural, ethnic, and national backgrounds use, and are portrayed by, communication institutions and processes. Covers issues of representation, identity, and difference.

540. Seminar: Organizational Communication 3 credits. Study of theories and practice of communication in group, intergroup and organizational settings with attention to methods of research and analysis.

545. Advocacy and Communication 3 credits. Focuses on various communication strategies designed to influence audiences across contexts (e.g., advertising, journalism, public relations, social movements, grass root activities). Theories of public relations, rhetoric, mass communication, and persuasion are applied to specific cases of mediated and face-to-face advocacy.

550. International and Global Communication An analysis of international, comparative telecommunication systems and globalization. Covers issues such as transnational communication, global journalism, satellite broadcasting and communication in diplomacy and international affairs.

555. Film/Video as Communication 3 credits. A view of film from analytical, promotional, and critical perspectives. Cinematography is addressed in historical, creative, semiotic, rhetorical, and technical contexts. Cinema, directors, genres, and problems from diverse nations are examined. Students write commentaries and promotions for oral and print media sources.

570. Seminar in Communication 1 to 3 credits. Discussion of selected topics in speech communication and mass communication.

591. Individual Readings and Research 1 to 3 credits. Directed readings and research in speech communication and mass communication topics and issues. May be repeated to a total of 6 credits.

599. Communication and Diversity 3 credits.

401. Organizational Communication 3 credits.
Communication Sciences
and Disorders

Professors Chamberlain, Fire, Madden, Rami, Saddoh and Swisher (Chair)

Department Description

The Department of Communication Sciences and Disorders offers graduate programs leading to the Master of Science degree in Speech-Language Pathology, and the Doctor of Philosophy in Speech and Hearing Science. The master’s degree program has been accredited by the Council on Academic Accreditation in Speech-Language Pathology and Audiology. A graduate degree is required for students planning a career in speech-language pathology and audiology. It is anticipated that graduates with a master’s degree will meet the academic and practicum requirements for the Certificate of Clinical Competence of the Boards of Examiners in Speech-Language Pathology and Audiology.

Master of Science in Speech-Language Pathology

Program Description

The Master of Science degree with thesis or without thesis is available with a major emphasis in Speech-Language Pathology and with supporting work in Audiology.

Admission Requirements

1. Graduate Record Examination—General Test.
2. Overall undergraduate GPA of at least 2.85 and a 3.00 in the courses required for an undergraduate major in Communication Sciences Disorders.
3. Admittance to approved status typically requires an undergraduate major in Communication Sciences Disorders.
4. Those admitted to Qualified Status must have at least 12 semester credits of undergraduate work in the field, but will be required to complete the coursework for the undergraduate major.
5. Criteria used in admission decisions:
   a. Scores on the Graduate Record Examination General Test.
   b. All grade point averages from previous undergraduate, post-baccalaureate and graduate studies.
   c. The extent and quality of previous clinical, research, and service activities, and the quality of speaking, writing, and interpersonal skills.
6. Admissions applications should include documentation of their qualifications relative to the criteria above.
7. Admissions applications should be completed by February 15.

Degree Requirements

1. The typical program of study includes the following courses: 501, 525, 531, 532, 533, 535, 536, 538, 542, 552, 562, 583, and 584.
2. CTL 515 Statistics I or an approved equivalent is required.
3. Thesis students will register for 998 (Thesis) and non-thesis students will register for 584 (10 or more weeks of external practicum) and 997 (Independent Study).
4. Students wishing to qualify for employment in a school setting must complete requirements for a teaching credential as a graduate student. This will include T&L 400, Methods and Materials for Speech Clinicians, and CSD 585, Practicum in the School Setting. Students must also take the Praxis I Teacher Certification Examination.
5. Graduate students already having a teaching credential with some other major must take T&L 400 and practicum in a school before being recommended for employment in a school.

Doctor of Philosophy
Speech and Hearing Science

Program Description

This program of study provides a background of study in normal and disordered speech, language and hearing. This program prepares the student for employment in a variety of settings including university teaching and research, clinical services and research, and/or research and consultation in industry.

Admission Requirements

1. A master’s degree in communication sciences and disorders, speech-language pathology, audiology, speech and hearing science, or a related field.
2. Graduate Record Examination-General Test.
3. An overall grade point average of 3.0, on a 4.0 scale, in graduate coursework in speech-language pathology, audiology, or a related area.
4. Criteria used in admission decisions will include:
   a. Scores on the Graduate Record Examination General Test.
   b. All grade point averages from previous undergraduate, post-baccalaureate and graduate studies.
   c. The extent and quality of previous clinical, research, and service activities; and d. Quality of speaking, writing and interpersonal skills.
5. Admissions applications should include documentation of the applicant’s qualifications relative to the criteria above.

Degree Requirements

1. Student will enter holding a Master’s degree in Speech Pathology, Audiology, or Speech and Hearing Science. Students without this degree or equivalent coursework will be required to complete a core curriculum of the following eight courses currently offered at the Master’s level: CSD 531, 532, 533, 536, 538, 542, 552, and 562.
2. Scholarly Tools for the Ph.D. — 12 credits required from the following: Psych 541, Psych 543, EFR 518, and CSD 592.
3. Seminar Courses within the department of Communication Sciences and Disorders — 12 credits required.
4. Cognate — 9 credits providing broad support.
5. Special Problems in Communication Disorders — CSD 597; 9 credits.
6. Research Projects — CSD 595; 8 credits. Students enroll in this course every semester. Research activity will begin in year one and continue through completion of the dissertation.
7. Dissertation — CSD 999; 10 credits. The Doctor of Philosophy degree in Speech and Hearing Science is a research degree and is conferred only in recognition of high achievement in independent scientific research and scholarship. This research is expected to make a significant contribution to the student’s chosen area of study.
Courses

501. Seminar in Speech-Language Pathology. 1 to 3 credits. Prerequisite: Consent of instructor. May be repeated as topics change.

501.01. A study of the application of current and emerging data in the area of clinical assessment and management of speech disorders in children and adults with communication impairments.

501.02. A study of the application of current and emerging data in the area of clinical assessment and management of language disorders in children and adults with communication impairments.

501.03. A study of the application of current and emerging data in the area of clinical assessment and management of disorders of hearing in children and adults with communication impairments.

501.04. Seminar: Neurogenic Communication Disorders IV. A study of cognitive and communication deficits that accompany right hemisphere damage, as well as traumatic brain injury, their diagnosis and management.

525. Introduction to Research in Speech-Language Pathology and Audiology. 3 credits. Research methods in Speech-Language Pathology and Audiology. Steps in research before data analysis is undertaken. Culminates in a research proposal.

531. Clinical Audiology. 3 credits. Prerequisites: CSD 483 or consent of instructor. Advanced audiological concepts and techniques including speech audiometry, masking, bone conduction, advanced pure-tone testing, pediatric hearing evaluation, and the psychophysical and psychometric bases of audiometric assessment.

532. Neurogenic Communication Disorders I. 3 credits. Prerequisites: CSD 422 and 231. Study of the representation or organization of language in the human brain as determined by multidisciplinary techniques such as neuroimaging, electrical stimulation mapping, etc. Includes aphasia and communication disturbance in adults following traumatic brain injury, and also clinical management.

533. Investigations in Child Language. 3 credits. Prerequisites: CSD 343. Students will examine theoretical questions and concerns about normal and disordered child language which are studied through a search of pertinent literature and through observation and analysis of children's linguistic production.

535. Seminar in Speech and Hearing Science. 1 credit. Prerequisites: CSD 231 and CSD 235. A study of the application of instrumental analysis of speech production, transmission and perception to the diagnosis and treatment of communication impairments in children and adults.

536. Stuttering Interventions. 3 credits. A study of the theoretical bases for and the clinical management of stuttering in children and adults.

537. Advanced Clinical Management. 2 credits. Prerequisite: completion of undergraduate major sequence in CSD or consent of instructor. Integrated study of the process involved in total clinical case management including the development of communication and observation competence, clinical literacy, creative problem solving, decision making, supervisory and consultation skills.


562. Augmentative/Alternative Communication. 3 credits. Prerequisites: CSD 422 and CSD 542. A study of the evaluation and application of manual and electronic communication aids for the severely handicapped.

583. Advanced Diagnostic Procedures. 3 credits. Prerequisites: CSD 383. Administration and interpretation of diagnostic instruments for evaluation of communication problems, interviews, case histories, and parent counseling.

584. Advanced Clinical Practicum I. 1 to 16 credits. Prerequisites: CSD 485 and consent of instructor, provision of clinical services to individuals with communication disorders under the supervision of an ASHA certified supervisor. Placement will be the UND Speech-Language-Hearing Clinic or a departmentally-approved external site.

585. Practicum in the School Setting. 10 credits. Prerequisites: Graduate standing and consent of the department. Supervised practicum in a University-approved cooperating school.

586. Advanced Clinical Practicum: Audiology. 1 to 16 credits. The administration and interpretation of tests and procedures for evaluation of human auditory functioning: practice involving interviews, case histories and client counseling.

592. Research Design in Speech and Hearing Sciences. 3 credits. Prerequisites: Psych 541, Psych 543. The use of speech science instrumentation and data collection and analysis in human speech, language and hearing.

595. Research Problems in Speech-Language Pathology-Audiology. 1 to 3 credits. Prerequisite: consent of instructor. A. Speech-Language Pathology. B. Audiology.

597. Special Problems in Communication Disorders. 1 to 3 credits. Prerequisites: Consent of the instructor. An examination of special topics in communication disorders.

597. Independent Study. 2 credits.

598. Thesis. 4 credits.

599. Dissertation. 10 credits.

343. Language Development. 3 credits.

353. Language Disorders. 3 credits.

431. Introduction to Audiology. 3 credits.

434. Aural Rehabilitation. 3 credits.

497. Special Problems in Communication Disorders. 1 to 3 credits.

Computer Science

Professors Grant, Hu, Kim, Liu, Marsh (Graduate Director), O’Neil (Chair), Reza and Wiggen

Program Description

The Department of Computer Science offers graduate study leading to the Master of Science degree. Both the thesis option and the non-thesis option are available. The department is a part of the John D. Odegard School of Aerospace Sciences which provides unique opportunities for research by faculty and graduate students. There is strong interest within the department in the areas of artificial intelligence, computer security, database, image processing, internet applications, networks, object oriented design, operating systems, simulation, software engineering, and theoretical computer science.

Admission Requirements

1. Bachelor’s degree, normally in Computer Science.
2. Overall undergraduate GPA of at least 2.85.
3. Graduate Record Examination General Test or an undergraduate degree from a CSAB/CSAC accredited degree program in Computer Science.
4. Eight prerequisites:
   1) Expertise in two high-level languages (CSci 161, 260)
   2) Basic knowledge of data structures (CSci 242)
   3) Basic knowledge of computer architecture (CSci 370)
   4) Basic knowledge of operating systems (CSci 451)
   5) Basic knowledge of formal languages, automata, and computability (CSci 435)
   6) Basic knowledge of discrete mathematics (Math 208)
   7) Completion of one year of calculus (Math 165 and 166)
   8) Completion of an additional course in statistics, probability, or linear algebra (Math 321, 327, 403, 421 or 442)

The department recognizes that the expertise identified above may be acquired in several ways, but the appropriate UND courses are listed as a guideline for prospective students. Students who do not meet all of these prerequisites may be admitted to Qualified status with the obligation of meeting the remaining requirements early in their graduate study but without graduate credit.

Degree Requirements

All students must complete the twelve-credit core of required courses, defined as follows:

1. Two courses from the list below:
   - CSci 513 Advanced Database Systems
   - CSci 543 Advanced Artificial Intelligence
   - CSci 551 Distributed Operating Systems
   - CSci 555 Computer Networks

2. Two courses from the list below:
   - CSci 514 Advanced Operating Systems
   - CSci 522 Theoretical Foundations
   - CSci 532 Programming Languages and Paradigms
   - CSci 575 Analysis of Algorithms
   - CSci 565 Advanced Software Engineering

Applied Software Engineering Track

(non-thesis option, 32 credit hours)

1. The core of required courses (12 credits).
2. Four or five elective courses (12-15 credits). CSci 500 may not be used as an elective.
3. The core and elective courses must include CSci 463 (Software Engineering) and either of CSci 565 (Advanced Software Engineering) or CSci 562 (Formal Specification Methods).
4. CSci 566, Software Engineering Project (3-6 credits), defined in consultation with the student’s Independent Study Adviser.
5. CSci 997, Independent Study (2 credits), a complete write-up of the Software Engineering Project in accordance with the department’s Software Engineering Project Report format requirements.
6. Successful completion of a written comprehensive examination on the areas covered in the core courses selected by the student.

**Computer Science Track**
(thesis option, 30 credit hours)

1. The core of required courses (12 credits).
2. Four elective courses (12 credits). CSci 500 and CSci 566 may not be used as electives.
4. Successful completion of a written comprehensive examination on the areas covered in the core courses selected by the student, required only if the student receives a grade lower than “B” in core courses.
5. A final oral examination, which includes a defense of the thesis.

**Courses**

500. Graduate Orientation 1 credit. A discussion of various research and applied computing projects. Continued enrollment required of all graduate students until a research project topic and an advisor are selected.
501. Topics in Computer Science. 1 to 3 credits. Prerequisite: Consent of instructor. Selected topics from current developments in Computer Science.
513. Advanced Database Systems. 3 credits. Prerequisite: CSci 455. A study of concurrency control, recovery, query processing and optimization, security, and new advancements including research issues in database systems.
522. Theoretical Foundations of Computer Science. 3 credits. Prerequisite: CSci 435. A selection of topics from theoretical computer science, possibly including formal languages, automata, other models of computation, and the theory of computability, decidability, and complexity.
532. Programming Languages and Paradigms. 3 credits. A study of current topics in programming languages and paradigms. Course content may vary with current issues and student interests.
536. Compiler Design. 3 credits. Prerequisite: CSci 465. Formal specification of programming languages, syntactic and semantic analysis, code generation and error handling.
537. Graduate Cooperative Education. 1 to 3 credits. Prerequisite: A minimum of 9 graduate credits in Computer Science. A practical work experience in advanced computing, approved by the student’s advisor. Requirements include a written report and an oral presentation upon completion of the work experience. 50% grading only.
543. Advanced Artificial Intelligence. 3 credits. Prerequisite: CSci 365 or CSci 384. Study and application of advanced and recent topics drawn from two or more areas of Artificial Intelligence: problem solving, knowledge representation, expert system, approximate reasoning, planning, machine learning, natural language processing and perception.
546. Advanced Computer Graphics. 3 credits. Prerequisites: CSci 446, Math 265. An introduction to advanced topics in computer graphics. Included are light and color theory, image processing and compression, spatial-frequency transformations, ray-tracing, shading theory, and topics of current interest.
551. Distributed Operating Systems. 3 credits. Prerequisites: CSci 370, CSci 451, and one of CSci 327, CSci 427 or CSci 555. A study of operating systems in the context of distributed systems and distributed processing. Topics include: interprocess communication, process synchronization, distributed file systems and memory management, performance measurement and evaluation. A modern distributed processing system will be examined.
555. Computer Networks. 3 credits. Prerequisite: CSci 327. A study of new and developing network architectures and communication protocols. Broadband technologies will be considered including BISDN, ATM networks, and other high-speed networks.
562. Formal Specification Methods. 3 credits. Prerequisites: CSci 435 and 463. A foundational course that introduces several formal specification techniques for construction and analysis of software artifacts. Included are rigorous program development, abstract specifications of modules, and modeling of concurrent and distributed software.
565. Advanced Software Engineering. 3 credits. Prerequisite: CSci 463. A study of current topics related to the design and implementation of large software systems. Course content may vary with instructor and student interest. Potential topics include: software testing and validation, programming environments, program metrics and complexity, design methodologies, software reliability and fault tolerance.
566. Software Engineering Project. 3 to 6 credits. Prerequisite: CSci 463. The complete development of a useful software product, including specifications, design, documentation, coding, testing and verification. Students must work in teams. The project is supervised by the student’s Independent Study Advisor. This course may not be used as an elective for the thesis option in computer science.

575. Analysis of Algorithms. 3 credits. Prerequisite: CSci 435. The time and space complexity of classical computer algorithms is analyzed. NP hard and NP complete problems are characterized and illustrated.
591. Directed Studies. 1 to 3 credits. Prerequisite: Graduate standing, consent of instructor. An investigation of some specific area by an individual or small group of students working closely with a member of the graduate faculty.
427. Advanced Data Communications. 3 credits.
465. Modeling and Simulation. 3 credits.
446. Computer Graphics. 3 credits.
452. Operating Systems II. 3 credits.
455. Database Management Systems. 3 credits.
463. Software Engineering. 3 credits.
465. Principles of Translation. 3 credits.
491. Seminars in Computer Science. 1 credit.

**Counseling**

**Professors Daughtry, Houston, Juntunen (Chair), Loewy (Ph.D. Director), Twohey, Wettersten and Whitcomb (Master’s Director)**

**Department Description**

The Department of Counseling offers graduate programs leading to the Master of Arts in Counseling and Doctor of Philosophy in Counseling Psychology. The Doctor of Philosophy in Counseling Psychology is accredited by the American Psychological Association (APA). Graduates of the M.A. program are eligible to apply for licensure as a Counselor in North Dakota as well as other states. Completion of the M.A. program partially fulfills requirements for certification as a School Counselor or certification as a Certified Rehabilitation Counselor or licensure as an Addiction Counselor in North Dakota. The Ph.D. in Counseling Psychology provides preparation for licensure as a Psychologist in North Dakota, as well as other states.

**Master of Arts in Counseling**

The Master of Arts is appropriate for those who wish to become counselors in community agencies, such as addiction treatment clinics, mental health centers, rehabilitation centers, and family service organizations. The Master of Arts is also appropriate for those planning careers in college counseling and student development services and for those who wish to become counselors in elementary, middle, junior high, or high schools.

**Admission Requirements**

1. Twenty semester credits of coursework in the behavioral sciences at the undergraduate level, which must include theories of personality, abnormal psychology, developmental psychology, and statistics. (Courses in psychology and sociology may be applied toward this prerequisite.) Courses in other social science disciplines where the focus is on the description or explanation of individual or group behavior may be accepted in fulfillment of this prerequisite at the discretion of the department.
2. Admission is based on achievement in undergraduate work, satisfactory performance on the General Record Exam General Test or the Miller Analogy Test, favorable recommendations and the admission committee’s perception of the “best fit” based on the applicant’s personal statement.

**Degree Requirements**

Prerequisites: 20 hours of Behavioral Sciences, including Abnormal Psychology, Statistics, Personality Theory, and Developmental Psychology.

**COMMUNITY AGENCY**

501 Ethics 2 cr
502 Prof. Issues 1 cr
### REHAB EMPHASIS

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>506</td>
<td>Rehab: Foundations &amp; Ethics</td>
<td>3 cr</td>
</tr>
<tr>
<td>510</td>
<td>Methods</td>
<td>3 cr</td>
</tr>
<tr>
<td>514</td>
<td>Rehab: Assess &amp; Eval</td>
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<tr>
<td>515</td>
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<tr>
<td>516</td>
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</tr>
<tr>
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<td>Group Theory</td>
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<td>Career</td>
<td>3 cr</td>
</tr>
<tr>
<td>530</td>
<td>Theory</td>
<td>3 cr</td>
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<tr>
<td>531</td>
<td>Gender</td>
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<tr>
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<td>Multicultural</td>
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<td>Couples</td>
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<tr>
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<td>Practicum</td>
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<tr>
<td>584</td>
<td>Internship</td>
<td>8 cr</td>
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<tr>
<td>997/8</td>
<td>IS or Thesis</td>
<td>2 or 4 cr</td>
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Plus 3 credits of electives from the following:

- 529 Addiction 2 cr
- 565 Child & Adolescents 3 cr
- 565 Mid & Older Adult 3 cr
- 565 Special Topics 1-3 cr
- 585 Research Practicum 1 cr

Total 48 (IS) or 50 (Thesis)

### ADDICTION EMPHASIS

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<td>516</td>
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<tr>
<td>517</td>
<td>Psych Test</td>
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<td>565</td>
<td>Child and Adolescent Development</td>
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<td>565</td>
<td>PSY 451</td>
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<td>565</td>
<td>COUN 565 Mid and Older Adult Dev.</td>
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Total 51 (IS) or 53 (Thesis)

### SCHOOL EMPHASIS

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<td>3 cr</td>
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<td>525</td>
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<td>997/8</td>
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<td>2 or 4 cr</td>
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</table>

Total 48 (IS) or 50 (Thesis)

Students may enroll in the counseling practicum (COUN 580) after they have satisfactorily completed at least ten credits in the program including COUN 510, Counseling Methods; COUN 530, Theory; COUN 501, Ethics, or COUN 506, Rehabilitation Counseling. After successfully completing practicum, students will enroll in COUN 584: Internship in Counseling, which is a two-semester supervised counseling experience at an external site. Internship will typically be completed during the second year in the program. Internship assignments are individually arranged and administered by the department’s Internship Coordinator.

In addition to this practitioner course sequence, students are required to complete a series of research training experiences culminating in the completion of the Independent Study (COUN 997), an independent research project conducted under the direction of the student’s advisor. Students are encouraged to begin considering and planning their research project early in their program.

After completing the majority of coursework for the degree and advancing to candidacy, students are eligible to sit for the Master’s Comprehensive Examination, which is offered once each fall and spring semester. A passing score on the examination is required for graduation.

### Doctor of Philosophy—Counseling Psychology

#### Program Description

The program provides preparation at the Ph.D. Level for employment in a variety of human service settings. These settings include: community mental health agencies, private practice, college and university counseling centers, hospitals and medical centers, or college and university departments of counseling and psychology.

The program provides preparation for licensure as a psychologist in North Dakota and is accredited by the American Psychological Association. The curriculum adheres to recommendations of the American Psychological Association for the preparation of counseling psychologists and reflects a model which equally emphasizes science and practice.

The program accepts students at the post bachelor’s and post master’s level. The Department is committed to diversity, particularly to training for Native Americans, and Native American mental health issues.

#### Admission Requirements

1. For students accepted at the post master’s level a grade of B or higher in at least four graduate level counseling courses or equivalent, including Counseling Methods, Theories and
Techniques of Counseling, Counseling Practicum and Research Methods.
2. Eighteen (18) semester credits of undergraduate psychology including coursework in general psychology, developmental psychology, abnormal psychology, personality theory, experimental and research methods, and statistics.
3. Graduate Record Examination—General and Psychology Subject tests.

Students are selected on the basis of undergraduate GPA, master’s degree GPA (if applicable), evaluations of pre-practicum and practicum performance when appropriate to the master’s degree program, scores on the Verbal, Quantitative, Analytic and Psychology subtests of the Graduate Record Examination, references, vocational training and experiences, career goals, and perceived “best fit” by the admissions committee based on the applicant’s personal statement and the research and clinical interests of the faculty. Doctoral graduates from a recent four year period have had the following average grades and scores: undergraduate GPA 3.28, master’s GPA 3.74, GRE-V 526, GRE-Q 564, GRE-A 610, and GRE Psych 546. A balance between numbers of male and female students is preferred in graduates from a recent four year period have had the following average grades and scores: undergraduate GPA 3.28, master’s GPA 3.74, GRE-V 526, GRE-Q 564, GRE-A 610, and GRE Psych 546. A balance between numbers of male and female students is preferred in the program. Students from minority ethnic groups are encouraged to apply.

Degree Requirements
1. A major in Counseling Psychology, a minor in Psychology (24 credits).
2. Psychological foundations coursework in the following areas: biological bases of behavior, cognitive/ffective bases of behavior, social psychological bases of behavior, and individual differences bases of behavior.
3. Two scholarly tools (of four courses each)—(1) Research Methods/Statistics and (2) Assessment/Diagnosis.
4. A qualifying exam.
5. Dissertation, successful completion of Qualifying Examination, Comprehensive Examinations, and completion of a 12-month APA approved pre-doctoral internship in Psychology.

Cognate in the Department of Counseling
A cognate in the Department of Counseling, consisting of a minimum of nine semester credits of counseling coursework may be taken by master’s or doctoral students in related fields. Cognate coursework should be planned in consultation with a member of the department faculty. Cognates will not include practicum or internship; students interested in these experiences should consider a for- mulation in the Department of Counseling (below).

Minor in the Department of Counseling
A minor in the Department of Counseling consisting of a minimum of 20 semester credits of counseling coursework may be taken by master’s or doctoral students majoring in a related field. Such a minor should include the following five courses: 510, 517, 519, 530, and 532. All doctoral students who wish to complete a minor in the department must include a Counseling faculty member on the Faculty Advisory Committee and should seek advice about appropriate courses and course sequences.

Department Evaluation of Students
The Counseling faculty conduct periodic reviews of students’ progress in the MA and PhD programs, including their academic performance, counseling and psychoeducational skills, profession- alism, and ethics. An interview may be required as part of the review. Deficits identified through faculty review may result in either a re- quirement that the student engage in remedial work or the removal of the student from the program.

As noted in Standard 7.04 of the 2002 Ethics Code of the Ameri- can Psychological Association, students may need to disclose personal information if that information is necessary to evaluate or obtain assistance for students whose personal problems could reasonably be judged to be preventing them from performing their training or professionally related activities in a competent manner or posing a threat to the students or others.

The practice of counseling requires significant self-disclosure for the person receiving counseling. Counseling students must be- come very familiar with this process. Therefore, it is an essential training component of the Department of Counseling to provide assign- ments and classroom experiences that call for student self-dis- closure of a personal nature, in an atmosphere of respect and confi- dentiality, to an extent not observed in other academic disciplines. The nature or extent of expected self-disclosure is specified in each course syllabus.

Courses

501. Ethics in Counseling 2 credits. Focus will be on the Codes of Ethics and Standard of Practice of the American Counseling Association and corresponding ethics codes for sub specialties within the counseling profession. Students will learn to interpret these codes and apply them to their professional practice.
502. Professional Issues in Counseling 1 credit. Corequisite: COUN 501, only for students in the Community Agencies Emphasis and Addictions Emphasis. An intro- duction to counseling practice and services in mental health, addiction, and other commu- nity agencies. Emphasizes professional issues in the field, professional development and career paths, and related topics.
506. Rehabilitation Counseling: Foundations and Ethical Issues 3 credits. Comprehensive introduction to the rehabilitation profession, including past, present, and future trends. Areas emphasized: profession philosophy; organizational structure; historical and legislative influence; rehabilitation process and service delivery systems; profes- sional issues, ethical codes, and behavior.
510. Counseling Methods 3 credits. Two training components are combined to provide an intensive practicum experience. The didactic component introduces the basic interviewing and active listening skills; a laboratory component provides practice in the practical application of those skills in simulated counseling interviews.
512. Rehabilitation Counseling: Assessment and Evaluation 3 credits. An intro- duction to assessment and related ethical issues in rehabilitation counseling. Assess- ment for vocational ability and independent living will be emphasized. Theory and re- search will be addressed, within a primarily applied framework.
513. Methods of Research 3 credits. Methods and procedures of research develop- ment, design and analysis related to counseling and behavioral science. Experience in formulating and developing an individual research project. Considers research ethics and protection of human participants.
516. Counseling Research Laboratory 1 credit. Corequisite: COUN 515. Intro- duces basic procedures in analysis of counseling research data. Topics including data coding, data entry and use of statistical packages are presented in an individualized man- ner. Repeatable to 2 credits.
517. Psychological Testing 3 credits. The application of principles of psychologi- cal measurement to selected instruments in the areas of intellectual functioning and apti- tudes; educational and occupational achievements; career interests; and personality. De- velopment of test interpretation skills.
518. Group Theory and Process 3 credits. Addresses the principles and practices of support, task, psycho-educational and therapeutic groups with various populations in a multicultural context. Includes study of professional issues relevant to group processes. Involves participation and leading group experiences.
519. Career Counseling 3 credits. An introduction to the psychology of careers and to the practice of career counseling. Career development theories, occupational clas- sification systems, assessment instruments, and the use of occupational information for career education and life planning are included. Career counseling strategies for use with a diverse population are introduced.
522. Management of School Counseling Programs 2 credits. Study of the organi- zation and administration of counseling programs in school settings, including founda- tions of program development and evaluation. Characteristics of effective school counsel- ors. Consideration of professional and ethical concerns in school counseling.
523. Elementary School Counseling 2 credits. Exploration of models of elemen- tary counseling and examination of counseling materials in implementing a counseling program.
524. Middle School Counseling 2 credits. Exploration of models of middle school counseling and examination of counseling materials in implementing a middle school counseling program.
530. Theories of Counseling, Personality and Development. 3 credits. Study and analysis of counseling interventions based on different theoretical models, emphasizing personality and human development. Course involves viewing video tapes of simulated or actual counseling sessions, role play demonstrations, and role played practice of various theoretically based counseling interventions.

531. Psychology of Women, Gender and Development. 3 credits. This course presents current research and trends in developmental theory, particularly theories pertaining to the psychological development of women and men. Issues such as abuse, aggression, depression, eating disorders, emotional experience and expression, heterosexism, feminism, and multiculturalism will be examined as related to the practice of psychology. Learning methods include writing, music, film, group discussion and creative projects. S/U grading only.

532. Multicultural Counseling. 3 credits. This course offers an introduction to counseling theories and interventions appropriate for American ethnic and non-ethnic minority clients. The values suppositions of various cultural groups will be examined. In-class group experience is included.

533. Couples and Family Counseling. 3 credits. Prerequisite: COUN 510, or instructor approval. Application to the major theories of couples and family counseling and their associated interventions. A combination of readings, lecture, discussion, demonstrations and role-plays will be used.

541. Career Counseling Theories. 3 credits. Prerequisite: COUN 519 or equivalent admission to doctoral program. Advanced study of major career counseling theories, models, and methods.

540. Career Counseling Theories. 3 credits. Prerequisite: COUN 517 or equivalent admission to doctoral program. Introduction to counseling psychology as a profession, issues of professional identity, and current trends affecting the field.

545. Research Issues in Counseling Psychology. 3 credits. Prerequisite: Admission to the doctoral program. Study and analysis of the ethical, legal and practical issues in Counseling Psychology. Evidence in Counseling application. Guidelines will be emphasized. Professional issues include the history and development of Counseling Psychology as a profession, issues of professional identity, and current trends affecting the field.

555. Advanced Psychological Testing. 3 credits. Prerequisite: COUN 517 or equivalent admission to doctoral program. A critical examination of the rationale, construction, and use of personality assessment tests and test inventories, including current views on test validity and reliability, prediction models, and related observational techniques.

560. Supervision Theory and Technique. 3 credits. Prerequisite: Admission to the doctoral program or instructor permission. A survey and critical examination of approaches, techniques and issues in supervision. Critical analysis of approaches to supervision, demonstrations, and role-played experiences of different supervision techniques.

565. Professional Seminars. 1 to 3 credits. Prerequisite: consent of instructor. Seminars are designed to present current research and supplement coursework in several areas. May be repeated up to eight credits. S/U grading only.

568. Personality Assessment. 3 credits. Prerequisite: COUN 517 or equivalent admission to the doctoral program or permission of instructor. Theory, research, evidence, and training in the administration, scoring, interpretation and use of personality assessment instruments. Clinical interviewing and checklists, behavioral observations and report writing skills. Issues of race, ethnicity, gender, age and disability in the use of these instruments is emphasized. A two-hour lab provides supervised practice in test administration and scoring.

569. Cognitive Assessment. 3 credits. Prerequisite: COUN 517 or equivalent admission to the doctoral program or permission of instructor. Theory, research, evidence, and training in the administration, scoring, interpretation and use of cognitive assessment instruments. Clinical interviewing and checklists, behavioral observations and report writing skills. Issues of race, ethnicity, gender, age and disability in the use of these instruments is emphasized. A two-hour lab provides supervised practice in test administration and scoring.

580. Counseling Practicum. 4 credits. Prerequisites: COUN 510; COUN 501 or 506 or permission of instructor; COUN 530 or permission of instructor; 10 completed COUN credits. Introduction to counseling practice. Emphasis on development, improvement, and evaluation of counseling relationships. Interview skills in counseling practice with live supervision. S/U grading only.

583. Field Work. 1 credit. Prerequisite: Admission to doctoral program. Participation in the activities of a counseling agency or similar appropriate organization. Continued development of counseling, assessment, and consultation skills with individuals, couples, groups, organizations, and communities in a multicultural context. Participation in small group and individual supervision and in case conferences. S/U grading only.

584. Internship in Counseling. 1 to 2 credits. Readings in selected areas of counseling. May be repeated up to six credits. S/U grading only.

595. Continuing Enrollments. 1 to 12 credits.

997. Independent Study. 2 credits.

998. Thesis. 4 credits.

999. Dissertation. 1 to 12 credits.
admission for candidacy. Students not admitted under the J.D./Ph.D. specialization will also be required to complete a comprehensive exam in their specialty area.

The Curriculum:

THEORY

Select three courses from the following:

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<th>Course</th>
<th>Semester</th>
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<td>CJ 505</td>
<td>Studies in Criminological Theory</td>
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<td>UND</td>
<td>CJ 511</td>
<td>Historical Perspectives in Criminology</td>
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<td>UND</td>
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<td>Contemporary Perspectives in Criminology</td>
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METHODS/STATISTICS

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Total 18 cr.

Crime and Justice Administration

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<tr>
<td>UND</td>
<td>CJ 560</td>
<td>Management Issues in Criminal Justice</td>
<td>3 cr.</td>
</tr>
<tr>
<td>UND</td>
<td>Psci 531</td>
<td>Public Personnel Administration</td>
<td>3 cr.</td>
</tr>
<tr>
<td>UND</td>
<td>Psci 532</td>
<td>Public Budgeting &amp; Financial Management</td>
<td>3 cr.</td>
</tr>
</tbody>
</table>

Total 15 cr.

OR

J.D./PH.D. SPECIALIZATION

Students who have successfully completed all requirements for, and have been awarded, a Juris Doctorate (J.D.) degree may complete the Ph.D. in Criminal Justice through meeting all requirements of the Theory and Methods/Statistics components of the doctoral program and successful defense of a dissertation.

OR

Students currently enrolled in an accredited law school, and who successfully complete the course of instruction leading to a Juris Doctorate, and successfully complete the Theory and Methods/Statistics components of the doctoral program, and upon successful defense of a dissertation, may be awarded a Ph.D. in Criminal Justice.

Electives:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Course</th>
<th>Course</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>UND</td>
<td>IS 375</td>
<td>History of Federal Indian Law and Policy</td>
<td>3 cr.</td>
</tr>
<tr>
<td>UND</td>
<td>CJ 535</td>
<td>Seminar in Juvenile Justice</td>
<td>3 cr.</td>
</tr>
<tr>
<td>M State U</td>
<td>CJ 635</td>
<td>Seminar in Juvenile Justice</td>
<td>3 cr.</td>
</tr>
<tr>
<td>UND</td>
<td>CJ 540</td>
<td>Seminar in Criminal Justice Policy</td>
<td>3 cr.</td>
</tr>
<tr>
<td>M State U</td>
<td>CJ 640</td>
<td>Seminar in Criminal Justice Policy</td>
<td>3 cr.</td>
</tr>
<tr>
<td>UND</td>
<td>CJ 545</td>
<td>Seminar in Rural Justice Issues</td>
<td>3 cr.</td>
</tr>
<tr>
<td>M State U</td>
<td>CJ 645</td>
<td>Seminar in Rural Justice Issues</td>
<td>3 cr.</td>
</tr>
<tr>
<td>UND</td>
<td>CJ 555</td>
<td>Seminar in Tribal Justice Systems</td>
<td>3 cr.</td>
</tr>
<tr>
<td>M State U</td>
<td>CJ 630</td>
<td>Seminar in Tribal Justice Systems</td>
<td>3 cr.</td>
</tr>
<tr>
<td>UND</td>
<td>CJ 594</td>
<td>Practicum: Research</td>
<td>3 cr.</td>
</tr>
<tr>
<td>UND</td>
<td>CJ 597</td>
<td>Administrative Internship</td>
<td>1-6 cr.</td>
</tr>
<tr>
<td>M State U</td>
<td>CJ 570</td>
<td>Internship</td>
<td>6 cr.</td>
</tr>
<tr>
<td>M State U</td>
<td>CJ 401</td>
<td>Admin. of Criminal Justice Systems</td>
<td>3 cr.</td>
</tr>
<tr>
<td>M State U</td>
<td>CJ 401</td>
<td>Admin. of Criminal Justice Systems</td>
<td>3 cr.</td>
</tr>
<tr>
<td>M State U</td>
<td>CJ 592</td>
<td>Special Topics</td>
<td>3 cr.</td>
</tr>
<tr>
<td>UND</td>
<td>Phil 412</td>
<td>Philosophy of Law</td>
<td>3 cr.</td>
</tr>
<tr>
<td>UND</td>
<td>Psci 532</td>
<td>Public Policy</td>
<td>3 cr.</td>
</tr>
<tr>
<td>UND</td>
<td>Psci 533</td>
<td>Public Organizations</td>
<td>3 cr.</td>
</tr>
<tr>
<td>M State U</td>
<td>Psci 594</td>
<td>Special Topics in Psychology</td>
<td>3 cr.</td>
</tr>
<tr>
<td>UND</td>
<td>Soc 538</td>
<td>Seminar in Social Organization</td>
<td>3 cr.</td>
</tr>
<tr>
<td>M State U</td>
<td>Soc 558</td>
<td>Seminar in Social Disorganization</td>
<td>3 cr.</td>
</tr>
<tr>
<td>UND</td>
<td>Soc 568</td>
<td>Seminar in Social Psychology</td>
<td>3 cr.</td>
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</tbody>
</table>

(Upto 15 cr may be taken in others subjects offered for graduate credit at UND or M State U with the approval of the C.J. Graduate Student Advisory Committee).

Dissertation 18 cr.

TOTAL PROGRAM HOURS 60 cr.

Courses

510. Historical Perspectives in Criminology 3 credits. An overview of the development of western criminological thought from the enlightenment to the mid-twentieth century. The course examines viewpoints ranging from the demonic perspective to early learning, anomie/strain, social disorganization, labeling, and conflict theories.

511. Contemporary Perspectives in Criminology 3 credits. Prerequisite: CJ 510. An overview of developments in criminological thought from the mid-twentieth century to the present. The course examines the growth of mainstream viewpoints (e.g., anomie/strain, learning, and control theories) and critical criminology (e.g., Marxist, feminist, post-modern, and peacemaking perspectives).

515. Human Nature and Crime 3 credits. Prerequisite: CJ 505 or CJ 510. This course examines historical and contemporary applications of the concept of “human nature” in explanations of criminal behavior. Attention is also given to the role played by “human nature” in the evaluation of social institutions that react to crime and deviance. Finally, attempts to integrate biological and cultural explanations of human behavior as they pertain to crime will be addressed.

516. Theories of Punishment 3 credits. Prerequisite: CJ 505 or 510. This course surveys the variety of attempts to describe, justify and explain punishment as a feature of human social life. Emphasis is placed on criminal punishment, but extra legal punishments and their relationship to criminal punishments are also explored.

525. Advanced Quantitative Methods/Analysis 3 credits. Prerequisite: Soc 521. This course is intended to familiarize students with advanced multivariate statistical techniques. Topics include regression analysis, factor analysis and path analysis. Other specific statistical analysis techniques may also be explored.

526. Seminar in Juvenile Justice 3 credits. Prerequisite: Admission into Criminal Justice Ph.D. program. Variable topics addressing the administration of the juvenile justice system and juvenile justice policy. Course will consist of lectures, discussion, and readings.

540. Seminar in Criminal Justice Policy 3 credits. Prerequisite: Admission into Criminal Justice Ph.D. program. Variable topics addressing policy and policy development in the criminal justice system, including policing, prosecution, courts, and corrections systems. Course will consist of lectures, discussion and readings.

545. Seminar in Rural Justice Issues 3 credits. Prerequisite: Admission into Criminal Justice Ph.D. program. Variable topics addressing issues in the administration of policing, prosecution, courts, and corrections in rural areas, course will consist of lectures, discussion and readings.

551. Seminar in Tribal Justice Systems 3 credits. Prerequisites: Admission into Criminal Justice Ph.D. program and IS 375. Variable topics addressing the administration of criminal justice in Indian territory. Courses will consist of lectures, discussion and readings.

565. Victimization 3 credits. Prerequisite: Admission into Criminal Justice Ph.D. program. This course provides an analysis of the literature and research concerning criminal victimization. Attention will be directed toward current trends concerning the victim in the American criminal justice system with particular emphasis on measuring victimization, the impact of victimization and victim's rights and compensation initiatives.
Earth System Science and Policy

Professors Beeri, Hanley, Laguette, Phillips, Seelan, Seielstad (Chair) and Zhang

Program Description

The Earth System Science Institute offers graduate programs in Earth System Science and Policy, including programs of study leading to the degrees Master of Environmental Management, Master of Science, and Doctor of Philosophy. The mission of the Earth System Science and Policy Program is to provide an integrated and creative learning environment that fosters intellectual growth, critical thinking, and practical engagement in research and management of the Earth system and resources. Humans during the 20th century modified the global environment faster than they understood the consequences of their changes. The major theme of the program is sustainability, defined as meeting human needs and values while preserving the planet’s life-support systems.

Five major concentrations support the sustainability theme: 1) Biodiversity and Ecosystem Functioning, 2) Climate and Environmental Change, 3) Land and Resource Management, 4) Environmental Management, Policy, and Communication, and 5) Human Health and the Environment. The objectives of the program in Earth System Science and Policy include:

- Student-structured curriculum
- Research driven by societal needs and values
- Multidisciplinary education
- Learning within teams
- Experiential learning
- Proactively creating a future instead of reacting to it
- Unification of economic security, ecological integrity and social equity
- Cultural inclusiveness
- Regional focus but nested within global systems

The ESSP Program builds on an established research and applications team, centered at UND, but networking with seven other universities in four other states: the Universities of Idaho, Montana, and Wyoming; South Dakota and Montana State Universities; South Dakota School of Mines and Technology; and Sinte Gleska University. A geophysical laboratory, environmental laboratory, field instruments, airborne and satellite remote sensors, and other state-of-the-art equipment is available. More information on personnel and facilities is available online at: http://www.umar.org.

All three degrees offered in the Earth System Science and Policy program cross traditional boundaries and assist students to tailor the programs to their particular needs. Engagement with stakeholders, be they individuals or organizations of individuals, and from government, private industry, or public interest sectors, is central to the program. The Master of Environmental Management is a professional degree, likely but not exclusively terminal, providing a comprehensive knowledge of the principles of environmental and natural resource management. The Master of Science is for those primarily interested in the science of Earth’s systems, as well as how that science can be integrated into programs of action that lead toward sustainability. The MS degree prepares students either for entry or re-entry into the workforce, or for admission to a PhD program. The Doctor of Philosophy is a degree for original, high-quality research that assesses, mitigates, manages, reduces, or prevents a present or future environmental problem. PhD graduates will be innovative researchers and problem-solvers, prepared for the academic, industry, or government sectors.

Admission Requirements

In addition to the admission requirements set forth by the University of North Dakota Graduate School, students must typically fulfill the requirements below for admission to Earth System Science and Policy graduate degree programs. Since the programs have appeal to a wide spectrum of students, including some who may have been in the workforce for some years, applicants who do not fulfill all the requirements may submit compelling evidence for their equivalencies.

Master of Environmental Management (MEM) and Master of Science (MS)

1. Hold a Bachelor’s degree from an accredited college or university.
2. Have satisfactorily completed a minimum of college-level algebra plus 3 credits of college statistics or calculus.
3. MEM: Have completed a minimum of 6 semester credits in the natural sciences AND 6 semester credits in social sciences, e.g., economics, sociology, psychology, political science, anthropology/archeology, or related fields.
4. MS: Have completed a minimum of 12 semester credit hours in natural or physical sciences, e.g. physics, chemistry, geosciences, biology or related sciences.
5. Have completed a minimum average GPA of 3.00 on a 4.00 scale, on all upper division college-level coursework.
6. Provide to the Graduate School: transcripts of all coursework taken at an institution of higher education, a letter of application that clearly states the applicant’s professional and career objectives, and three letters of recommendation from professors, employers, and/or professional colleagues.
7. Have completed the general Graduate Record Examination (GRE).

Doctor of Philosophy (PhD)

1. Hold a Master’s degree from an accredited college or university.
2. Have satisfactorily completed a minimum of college-level algebra plus 3 credits of college statistics or calculus, AND a minimum of 12 semester credit hours in natural or physical sciences, e.g., physics, chemistry, geosciences, biology or related sciences, AND 6 semester credits in social sciences, e.g., economics, geography, environmental studies, sociology, psychology, anthropology, archeology, political science or related fields.
3. Have earned a minimum average GPA of 3.50 on a 4.00 scale on all graduate-level coursework.
4. Provide to the Graduate School: transcripts of all coursework taken at an institution of higher education, a letter of application that clearly states the applicant’s professional and career objectives, and three letters of recommendation from professors, employers, and/or professional colleagues.
5. Have completed the general Graduate Record Examination (GRE).

Financial Assistance

Graduate assistantships may be available to qualified students.
Degree Requirements

The overarching goal of all the degree programs offered in Earth System Science and Policy is to facilitate the acquisition of skills required to solve environmental problems or to seize opportunities presented by a changing environment. The degree requirements are therefore highly individualized. Much of the responsibility for learning rests upon the student.

Students enrolled in the MEM, MS, and (in most cases) PhD degree programs will all take the sequences ESSP 501, 501R, 501L (offered in the Fall) and 502, 502R, 502L (offered in the Spring). Thereafter the course selection will vary according to the degree sought and the specific interest of the student. Each student’s academic advisory committee will help design a customized curriculum. Courses offered by other departments at UND or by other universities in the Upper Midwest will be reviewed on an individual basis to determine if they may be considered as well, depending again upon the student’s specific needs.

Master of Environmental Management (MEM)

The Master of Environmental Management is a professional degree for those who wish careers as environmental policymakers. Graduates of the MEM program will have a comprehensive knowledge of the principles of environmental and natural resource management, acquired through practical experience solving a particular problem. The practical experience will be acquired through an internship. A final written and oral report of the project completed will be submitted.

A minimum of 36 credits beyond the baccalaureate, including six to nine credits for internship is required. ESSP MEM students must file with the Graduate School an approved program of study before the completion of fifteen credits of coursework, maintain a GPA of 3.00, and comply with the Graduate Catalog. Any student whose GPA falls below 3.00 will be placed on probation, and will have one semester to raise the GPA to 3.00 or above. Grades of C or poorer will not be accepted as fulfilling degree requirements.

All students must take oral and written examinations to qualify for candidacy in the MEM program. These will occur no later than the end of the first year of coursework and will entail a 5 to 10 page written description and an oral presentation of their intended research project. Successful completion, and oral defense, of a thesis is required for the MS degree. All exams will be administered and evaluated by the student’s Advisory Committee.

Doctor of Philosophy (PhD)

The PhD in Earth System Science and Policy is intended to prepare innovative researchers and problem-solvers for the public and private sectors, as much as for academia. Its core requirement is an original contribution, presented in final form as a dissertation, that assesses, mitigates, manages, remediates, or prevents a significant environmental problem of the present and the future. The program is multi-disciplinary and practical in nature, involving faculty from various disciplines and institutions, from public or private research laboratories, and from early-adopter stakeholders.

A minimum of 90 credits (30 of which must be taken in the Earth System Science and Policy Program) beyond the baccalaureate, including acceptable master’s degree work and up to 18 credits for dissertation, is required for the PhD degree. All PhD students will be required to spend a minimum of two semesters, full-time, on the UND campus after receiving a master’s degree. Because the ESSP program emphasizes (a) integration of the many components of Earth systems into a single global system and (b) using Earth System Science to change practices in society, it is recognized that doctoral students may need to conduct significant portions of their research off campus.

By the end of the second semester in the doctoral program, the student will select a chair of her/his Advisory Committee and, in consultation with that chair, recommend membership on the Advisory Committee. The Advisory Committee will typically have five members, at least two of whom must be from the ESSP faculty. One of the committee members will be appointed by the Dean of the Graduate School. That member will be from outside the ESSP Department. The committee will assist the student in course selection and definition of a research topic and will also administer and evaluate all examinations that are required for completion of the degree.

ESSP PhD students must file with the Graduate School an approved program of study before the completion of ten academic credits beyond the master’s degree, complete at least six credits of the approved program per calendar year, maintain a GPA of 3.50 with no grades below B, and comply with the Graduate Catalog. Any student whose GPA falls below 3.50 will be placed on probation and will have one semester to raise the GPA to 3.50 or above.

All students must take oral and written examinations to qualify for candidacy in the PhD program. Part of the written requirement requires all students to write a dissertation proposal in a style appropriate for submission to a funding organization or agency. Students will present their proposal for review no later than one year from the date of admission to the ESSP doctoral program. To be advanced to candidacy the PhD student will also take a written qualifying exam, which will be administered early in the student’s second year. Successful completion, and oral defense, of a dissertation is also required for the PhD degree. All exams will be administered and evaluated by the student’s Advisory Committee.
Courses

501. Earth System Science and Policy I. 5 credits. Prerequisite: Graduate standing in ESSP. Corequisites: ESSP 501R, 501L. An overview of the fundamental issues from five research areas: Biodiversity and Ecosystem Functioning, Climate and Environmental Change; Land and Resource Management; Environmental Policy, Management, and Communication; and Human Health and the Environment. Material will be presented "situationally" in a problem-based learning environment. ESSP faculty and guest lecturers will present background information relevant to the topics. Students are expected to engage actively in the learning process by 1) determining what further information they need to understand the problem, 2) researching the questions, 3) clearly and concisely presenting the findings of their research to one another.

501R. Earth System Science and Policy Recitation. 3 credits. Prerequisite: Graduate standing in ESSP. Corequisites: ESSP 501, 501L. Small group discussions to include students in an environmental issue.

501L. Earth System Science and Policy Laboratory I. 2 credits. Prerequisite: Graduate standing in ESSP. Corequisites: ESSP 501, 501R. Laboratory session. Will require one or more full day (field trips); may require one or more weekend field trips.

502. Earth System Science and Policy II. 5 credits. Prerequisites: ESSP 501, 501R, 501L. Corequisites: ESSP 502R, ESSP 502L. Course follows the design of ESSP 501 with more emphasis on written reports and team projects. At the beginning of the semester, students will either select or be assigned a topic for an interdisciplinary team project for completion by the end of the semester. The team project helps students acquire an interdisciplinary outlook, and fosters communication and cooperation within a positive multi-disciplinary work environment. This will provide students with skills that are integral to the management of complex environmental problems they will face in the world beyond academia.


506. Ecosystem Services: Valuing Nature in a Market Society. 3 credits. Prerequisite: Consent of instructor. Analyzes the services and goods provided by natural and human-made ecosystems with a primary focus on the agroecosystems and grasslands of the northern Great Plains. Explores the scientific framework of ecosystem services, their disruption or disturbance, economic and ecological values, methods of analyzing these values, and policy implications.

520. Earth Systems Modeling. 3 credits. Prerequisite: Graduate standing in ESSP, or consent of instructor. Introduction to statistical and deterministic approaches for modeling earth systems, including use of modeling to support management and policy decisions. Develops systems thinking skills and emphasizes modeling as a framework for environmental analysis and problem solving. Students will learn how different classes and scales of models are used to explore different type of environmental questions. Emphasis will be on the dynamic, interdependent and interactive relationships between human activities and ecosystem function and structure as well as the effects of these activities on biogeochemical cycles, energy flow, and biodiversity. Students will use these analyses to evaluate opportunities to shift toward more sustainable human behavior.

540. Advanced Topics in Geospatial Technologies. 3 credits. Prerequisite: Consent of instructor. The course’s intent is to stay abreast of technological developments in a rapidly evolving field. Course content will vary according to where the advances have the most immediate impact. The goal is to provide students exposure and hands-on experience needed to apply technologies to significant Earth System problems. Among technologies to be discussed are sensors for satellites and aircraft, data acquisition and image processing tools, verification and validation techniques, precision navigation by Global Positioning Satellites, and advanced uses of Geographic Information Systems.

562. Environmental Economics, Policy and Management. 3 credits. Prerequisite: Consent of instructor. Examines the principles of economics, natural resource limitations, and management, and the role of science in public policy decision making, with the intent of preserving Earth’s vital life-support systems while meeting human needs and aspirations. Through case studies, guest speakers, and personal experience, students learn science does or does not inform environmental policymaking. Students apply economic theory and analysis to evaluate environmental problems and policies and apply ecological principles to shape economic policy. Particular emphasis will be on wetland habitats and agroecosystems.

Communicating Environmental Information. 3 credits. Prerequisite: Consent of instructor. The focus of this class is on communication of scientific information to non-science audiences. Students will 1) probe the role of communication in the public perceptions of environmental issues, 2) examine the effectiveness of different tools in raising environmental awareness, 3) explore the barriers that hinder effective communication, 4) develop strategies to overcome these obstacles, and 5) profile a variety of environmental outreach activities. Ways to convert polarization among differing parties into consensus by communicating accurate, timely information will be explored.

Colloquium. 1 credit. Speaker series approximately weekly, on timely topics and research. An emphasis will be to hear from outside speakers. Speakers may occasionally deliver presentations electronically. Graduate students in ESSP are expected to attend.

Directed Study. 1-5 credits. Prerequisite: Permission of an ESSP faculty member. May be required of students with considerable experience or in the practice of education. Viewpoints presented "situationally" in a problem-based learning environment. ESSP faculty and guest lecturers present background information relevant to the topics. Students are expected to engage actively in the learning process by 1) determining what further information they need to understand the problem, 2) researching the questions, 3) clearly and concisely presenting the findings of their research to one another.

Doctoral Research. 1-15 credits. Prerequisite: Graduate standing in ESSP; or consent of instructor. Arranged with student’s advisory committee. May be repeated for credit.
Programs Offered

Goal 1: Describing personal and possible educational practice orally and in writing.

Goal 2: Assessing the consequences of educational decisions for student and adult learners in schools.

Goal 3: Exploring the personal, historical, philosophical, sociological, anthropological, psychological, multicultural, and/or organizational origins of educational practices.

Goal 4: Interpreting current research and commentary on educational issues and recognizing sources of discrepancy among them.

Goal 5: Developing the habit of seeking and citing evidence in regard to educational decisions.

Goal 6: Acquiring knowledge, attitudes, and skills needed to practice in one or more of the areas of professional specialization.

Goal 7: Learning through dialogue, literature review, questioning, writing, observing, application of research methodology, and other scholarly means.

Goal 8: Distinguishing among educational practices on the basis of their contribution to the vision of teaching and learning espoused by the program.

Degrees Offered

The Master of Education (M.Ed.) and the Specialist Diploma (Ed.S) focus graduate study on professional practice from a broad educational perspective and admit only certified educators. Both programs require completion of a final research paper or special project to culminate degree study. Refer to the Degree Requirements section of this catalog for a discussion of M.Ed. and Specialist Diploma requirements.

The Master of Science (M.S.) degrees offered in education admit students who are licensed/certified educators and others interested in the study of education. Degree requirements vary according to the background of the student and are described in the section devoted to each program. M.S. degree programs are available with thesis and non-thesis options.

The Doctor of Education (Ed.D.) and Doctor of Philosophy (Ph.D.) degrees are designed to prepare persons for leadership in the public schools or other educational agencies and for teaching and administration in colleges or universities. Study at the doctoral level requires that the student demonstrate analytic inquiry and creative scholarship in the study of education. The Ed.D. program focuses on study of professional practice and requires completion of independent work leading to an original dissertation with implications for the practice of education. The Ph.D. program emphasizes educational research and requires completion of independent work leading to an original dissertation focused on educational theory. Refer to the Degree Requirements section of this Catalog for delineation of requirements for the Doctor of Education and Doctor of Philosophy degrees.

For a complete picture of each degree program, the student is advised to read sections discussing the requirements of the Graduate School referenced in the paragraphs above, the requirements of the Education faculty in the following section, the pages devoted to discussion of each of the programs offered, and the graduate handbooks available from the dean of the College of Education and Human Development and/or the department.

Admissions and Review Processes

Success in the graduate study of education is related to qualities of mind, motivation, literacy, and experience. Among the qualities of mind sought in candidates for admission to Education programs are creativity, intelligence, independence of thought, willingness to take risks, openness to new ideas, openness to diversity, and flexibility of thought. Motivation is demonstrated by commitment to learners of all ages, professional growth, self-direction, and commitment to academic study leading to a graduate degree. Literacy is the ability to communicate effectively both orally and in writing. Experience may be demonstrated by diverse activities including work with children or adults in a variety of settings, foreign or domestic travel, and a liberal education. Each student brings a different mix of characteristics and strengths to graduate study.

In the admissions process, the applicant will develop a portfolio of materials which demonstrate the qualities of mind, levels of motivation and literacy, and quality of experience brought to study for an advanced degree. The portfolio will include the following items:

1. A completed Graduate School application form which includes a personal statement containing responses to the following three questions (no less than one typed page for each):
   a. Describe several personal and professional goals you would like to achieve in the next five years. Include in your description reasons why these goals are important to you.
   b. What are the characteristics, attitudes, values, and/or skills that you think will make you a good candidate for your chosen professional role?
   c. What have you already done professionally or personally of which you are proud?

2. Applicants for Master’s programs may supplement their portfolios with additional materials which represent their abilities (see 3 below).
   a. Any published writing, even if the material does not address educational issues;
   b. A detailed description and analysis of a day in a class or professional setting;
   c. A personal interview (This is a structured interaction and is an option open normally only to doctoral students);
   d. One of the following standardized test scores: The Advanced Graduate Record Examination, Miller Analogies Test, Graduate Record General Examination (verbal, quantitative, and analytical).

After the completion of the equivalent of one full semester, but well before taking the comprehensive examination, a preliminary review of the progress of each doctoral student will be conducted.

Each student admitted to one of the graduate programs in Education will be assigned a temporary advisor. As soon as possible after the preliminary review, students should (1) remove any entrance deficiencies; (2) identify a permanent advisor or Advisory Committee by consulting with the program chairperson; and (3) develop a formal program of study for the degree in consultation with the advisor or Advisory Committee.
The specific admission requirements for each of the graduate programs in education are described in the section devoted to each program.

Scholarly Tools

The scholarly tool requirement for the M.S., Ed.D., and Ph.D. degrees is an integral part of the graduate degree program. Since the purpose of the scholarly tool requirement in graduate study is to enable the student to read, understand and conduct research, the tools are to be directly related to the research interests of each graduate student. Achievement levels will be demonstrated by satisfactory completion of coursework in the appropriate scholarly tool area(s) or by a proficiency examination. A minimum of five semester credits in appropriate coursework for the M.S. degree is required.

There is no scholarly tool requirement for the M.Ed. or Ed.S. degrees.

For the Ph.D., the minimum scholarly tool requirements of 12 credits may be met by one of the following options:

Option 1: Qualitative emphasis option: EFR 510 Qualitative Research Methods (3 semester credits), EFR 520 Advanced Qualitative Research Methods (3 semester credits), and EFR 516 Statistics II (3 semester credits) or their equivalents, plus 3 credits of approved electives.

Option 2: Quantitative emphasis option: EFR 510 Qualitative Research Methods (3 semester credits), EFR 516 Statistics II (3 semester credits), and one of the following: EFR 517 Advanced Research Methodologies (3 semester credits), EFR 518 Multivariate Analysis (3 semester credits), EFR 519 Research Seminar-Experimental Design (3 semester credits) or their equivalents, plus 3 credits of approved electives.

Option 3: Tests and measurements option: EFR 511 Curriculum Evaluation (3 semester credits), EFR 512 Educational Tests & Measurements (3 semester credits), EFR 516 Statistics II (3 semester credits), and EFR 517 Advanced Research Methodologies (3 semester credits) or their equivalents.

The student’s advisory committee may approve an exception to these three specializations upon consultation with the research faculty. An appropriate exception would be a different sequence of studies that assures breadth and depth in the research process that is related to both the student’s career goals in research and in regard to the student’s research.

For the Ed.D., the minimum scholarly tool requirements may be met by one of the following options:

Option 1: Qualitative emphasis option: EFR 510 Qualitative Research methods (3 semester credits), EFR 590 Field Methods (1 semester credit), EFR 520 Advanced Qualitative Research Methodologies (3 semester credits) or their equivalents.

Option 2: Quantitative emphasis option: EFR 516 Statistics II (3 semester credits), and one of the following: EFR 517 Advanced Research Methodologies (3 semester credits), EFR 518 Multivariate Analysis (3 semester credits), EFR 519 Research Seminar-Experimental Design (3 semester credits) or their equivalents.

Option 3: Tests and measurements option: EFR 511 Curriculum Evaluation (3 semester credits), EFR 512 Educational Tests & Measurements (3 semester credits) or their equivalents.

The student’s advisory committee may approve an exception to these three specializations upon consultation with the research faculty. An appropriate exception would be a different sequence of studies that assures breadth and depth in the research process that is related to both the student’s career goals in research and to the student’s research.
507. Gender and Education. 3 credits. A critical feminist analysis of the history, philosophy, theory, curriculum, and practice of education. Teachers' beliefs and practices are presented for analysis and current educational philosophies are evaluated.

508. Anthropological Foundations of Education. 3 credits. Students will examine the convergence of anthropology and education through an analysis of education as cultural transmission and a review of enculturation and acculturation processes in traditional and modern societies.

509. Introduction to Educational Research. 3 credits. An introduction to the research methodologies used to study education. The course covers quantitative as well as qualitative types of research. The paradigm of both types of research will be contrasted and the application of the methodologies in actual research investigated.

510. Qualitative Research Methods. 3 credits. Qualitative research methods are naturalistic and contextual. The methodology derives from Anthropology and other social sciences, and seeks to understand human behavior from the actors' perspective. Students are to learn the fundamental data collection methods: observation, participant-observation, and interviewing, as well as data analysis through coding and categorizing.

511. Curriculum and Program Evaluation. 3 credits. A study of the theoretical models of curriculum and program evaluation theory. Emphasis on the analysis of models for implementation and application in various educational and social programs.

512. Educational Tests and Measurements. 3 credits. Prerequisite: EFR 515 or consent of the instructor. Application and integration of measurement theory in a research framework; evaluation of cognitive and affective scales with emphasis on the statistical and psychometric properties of the scales.

513. Computer Applications in Educational Statistics. 3 credits. Prerequisites: EFR 515 or concurrent or consent of the instructor. A study of computer applications in educational statistics, usually involving relatively large data sets using SPSS and/or SAS.

515. Statistics I. 3 credits. An introduction to basic statistical methods, focusing primarily on descriptive statistics and inferential statistics up to and including one-way analysis of variance.

516. Statistics II. 3 credits. An in-depth study of inferential statistics with primary emphasis on analysis of variance models, multiple regression techniques, analysis of covariance and other higher-order statistical procedures.

517. Advanced Research Methodologies. 3 credits. Both qualitative and quantitative aspects of research are considered for a variety of topics, including ethics in research, use of data banks, Q-methodology, survey research, Bayesian concepts, critical theory, longitudinal research and research consultation. Comprehensive examinations in educational research are addressed. This is a capstone course in educational research. Previous or concurrent involvement in research is highly desirable. Available for doctoral level students only.

518. Multivariate Analysis. 3 credits. Multiple regression in generalized problem solving, discriminant analysis, factor analysis, multivariate analysis, canonical analysis, judgment analysis, and multivariate analysis of covariance. Students are encouraged to analyze their own data with multiple methods including student-generated computer applications.

519. Research Seminar. 1 to 4 credits. Experimental Design—An in-depth treatment of analysis of variance designs including factorial designs, treatment by subjects designs, groups within treatment designs, Latin squares, higher dimensional designs, mixed effect designs, analysis of covariance, and trend analysis. Emphasis is placed on underlying linear models. Other seminars are held on specific research topics, particularly research proposals. May be repeated.

520. Advanced Qualitative Research Methods. 3 credits. Prerequisite: EFR 510 or consent of instructor. Advanced Qualitative Research Methods will engage students in more in-depth and complex theoretical and practical issues associated with the methodology. Students will conduct mini-research studies and examine qualitative studies conducted by others. Knowledge about IRB requirements will also be addressed.

521. Seminar in Foundations of Education. 1 to 4 credits. Advanced consideration of selected topics in Foundations of Education. May be repeated for credit with change of topic.

584. Internship in Educational Research. 1 to 5 credits. Prerequisites: Appropriate coursework in educational research and consent of the advisor and department chair. Practical experience in the conduct of educational research, analyzing data, and writing reports. Available for doctoral level students only. May be repeated.

590. Special Topics in Education. 1 to 4 credits. Prerequisite: Consent of instructor or advisor. Exploration of special topics in the study of education not regularly included in available course offerings. May be repeated for different topics.

591. Readings in Education. 1 to 4 credits. Prerequisites: Consent of advisor and instructor. Designed primarily for advanced graduate students. May be repeated for different topics.

592. Individual Research in Education. 1 to 4 credits. Prerequisites: Consent of advisor and instructor. May be repeated.

Department of Educational Leadership

Professors Houdek, Koppang, Lemon (Chair), Meyer and Rice

The mission of the Department of Educational Leadership is to prepare educational leaders to serve with vision, integrity, and skill in the elementary and secondary schools and in other educational organizations and agencies, particularly in higher education, for the state, region, and beyond. A secondary mission of the Department is to prepare leaders for positions in non-educational settings such as medical and social service organizations.

Admission Requirements

Admission to the M.Ed. and M.S. degree programs requires a bachelor’s degree from an accredited college or university, a cumulative undergraduate GPA of 2.75 or at least 3.00 for the last two years. Normally, applicants with teaching experience in public schools apply to the M.Ed. program, others to the M.S. program.

Admission to the Specialist Diploma, the Ed.D., and the Ph.D. programs normally requires a master’s degree in educational leadership or a closely related field. Applicants to these programs are required to have a minimum GPA of 3.5 in all graduate work. Applicants are also required to respond to essay questions which are provided in the application packet.

Master of Education

The M.Ed. program in Educational Leadership is designed to prepare students for administrative positions in either elementary or secondary schools. Upon completion of the M.Ed., all students will have completed the requirements for North Dakota principal certification at either the elementary or secondary level.

Master of Science

The M.S. program in Educational Leadership is designed for students whose goals are to obtain positions in education but not necessarily in public school administration. Students interested in research in educational administration, higher education administration, agency administration, or other education-related areas for which teacher certification is not required are encouraged to apply for the M.S. degree program. Upon completion of the M.S. degree, a student probably will not have completed the requirements for administrative certification in North Dakota.

Specialist Diploma

The Specialist Diploma, available at UND only in Educational Leadership, is designed for students preparing for school administrative positions. This course of study is usually considered to be a terminal program of advanced preparation for professional practice. Upon completion of the Specialist Diploma, a student generally will have completed the requirements for administrative certification including those required for the position of school superintendent in North Dakota.

Doctor of Education

The Ed.D. program in Educational Leadership is designed primarily for practitioners preparing for school administration positions including elementary or secondary principalships, superintendencies, curriculum directorships, or other school district central office positions, as well as persons preparing for administrative positions in higher education. Upon completion of the Ed.D. degree, a student generally will have completed the requirements for administrative certification including those required for the position of school superintendent in North Dakota.

Doctor of Philosophy

The Ph.D. program in Educational Leadership is designed for students preparing for positions in which research and creative experience are predominant interests. Ph.D. candidates are expected to have undertaken and completed independent research leading to an original contribution to knowledge in the field. It is generally expected that the Ph.D. dissertation will be publishable in the literature of educational leadership. School administrators do not generally seek this degree. Those who aspire to leadership positions in the academic
side of institutions of higher education, in government agencies, or in other educational policy organizations are more typically served by this degree.

**Doctoral Residence**

Beginning in 1999, doctoral students are admitted to a cohort-based program. Coursework in the first cycle is delivered over a three-year period. Participation in this program meets the residence requirement of the Graduate School. Courses are delivered in compressed blocks of a day and one-half to two days every three to four weeks. Persons interested in applying to this program should contact the Department of Educational Leadership.

In unusual circumstances, a very limited number of doctoral students may be allowed to pursue an accelerated course of study by being full-time, on-campus students.

For information about admission, program of study, or other degree requirements, please contact the chair of the Department of Educational Leadership.

**Courses**

501. Leadership, Planning, and Organizational Behavior. 3 credits. This course provides school leaders with preparation in skills for providing purpose and direction for schools, developing and assessing strategic plans, understanding the theory and practice of organizational behavior, and understanding the complexities of school and staff needs.

502. Technology and Information Systems. 2 credits. This course provides an understanding of selected computer applications for educational administrators. The focus of instruction is to have educational leaders use the computer as a decision making and planning tool for carrying out communication functions of administration at the building and district level.

503. Seminar in Educational Leadership. 1 to 4 credits. SU grading only.

511. Personal Communications and Ethics. 3 credits. This course prepares aspiring school leaders to plan for their personal and professional development, understand and use the principles of interpersonal, oral, and written communication, and follow a professional code of ethics.

512. Research, Measurement, and Program Evaluation. 3 credits. This course provides school leaders with an understanding of how to determine what diagnostic information is needed about students, staff, and the school environment; examine the extent to which outcomes meet or exceed defined standards, goals, or priorities for individuals or groups; design research instruments and measures; interpret research findings; and make programmatic and administrative decisions.

513. Curriculum, Instruction, and Learning Theory. 4 credits. This course provides school leaders the ability to understand major curriculum design models, interpret school district curricula, initiate needed analyses, and implement with staff a framework for instruction, align curriculum with anticipated outcomes, monitor social and technological developments as they affect curriculum, and adjust context as needs and conditions change.

514. Personnel, Supervision, and Staff Development. 4 credits. This course provides school leaders with preparation in skills for instructional improvement, working with faculty and staff to identify professional needs. Classes are designed for in-depth study and practice planning, organizing, and facilitating programs that improve faculty and staff effectiveness and are consistent with institutional goals and needs; supervising individuals and groups, providing feedback on performance; arranging for remedial assistance; engaging faculty and others to plan and participate in recruitment and development activities, and initiating self-development.

515. Education Law and Organizational Structure of Schools. 3 credits. This course is designed as a beginning law course for school administrators. Topics to be studied include organizational structure of schools, federal and state court systems, church-state issues, teacher rights, student rights, rights of students with disabilities, instructional issues, tort liability, and equal opportunity in education.

516. Policy and Educational Finance. 2 credits. Includes such topics as the organization and responsibility for education in the United States, the nature of educational programs and services, the changing nature of the educational system, and the financing of education at all levels.

517. Social, Cultural, Political, and Community Dimensions of Schools. 4 credits. This course provides school leaders with an understanding of the historical, philosophical, ethical, social, and economic influences affecting education to the degree that they can apply their understandings to professional decisions. Students are expected to apply political concepts and strategies to collaboration in involving the community in decision making, building community support for integrating health and social services in support of students, and developing community support for school priorities. Throughout the course, students' work will be expected to maintain a sensitivity to issues of diversity in a pluralistic society.

520. Middle School Principalship. 2 credits. Leadership responsibilities and techniques for middle school principals. Includes topics such as instructional improvement, administrator-staff-student relationships, communication, public relations, planning, and programming at the building level in middle schools.

521. Elementary School Principalship 2 credits. Leadership responsibilities and techniques for elementary principals. Topics include: the role of the elementary principal in the administration of the school, role of the principal in community relations, public relations, planning, and programming at the building level in elementary schools.

522. Secondary School Principalship 2 credits. Leadership responsibilities and techniques for secondary school principals. Includes topics such as instructional improvement, administrator-staff-student relationships, communication, public relations, planning, and programming at the building level in junior and senior high schools.

523. The Educational Plant 2 credits. Planning, construction, modification, and maintenance of school buildings. Includes techniques for developing and using the building, program, and community surveys.

524. Educational Personnel Administration 2 credits. Study of selection, assignment, evaluation, development, and release practices for certified and non-certified school personnel; salary and contract administration in schools.

526. Business Management in Education 2 credits. Study of the business function in educational organizations with emphasis on budget development and administration, accounting, purchasing, risk management, support services, and capital outlay.

527. Legal Issues in Education 3 credits. Study of the legal issues affecting educational organizations with emphasis on state and federal relationships to local institutions, school boards and other governing bodies, contracts, teachers and students' rights, and tort liability of educational organizations and their officers. Consideration is given to legal research and policy analysis.

529. Special Education Law 3 credits. A course designed to give participants a working knowledge of the legislative, judicial, and administrative changes which have revamped the areas of teaching and administering special education since 1974. It will provide information useful to administrators, practicing attorneys, parents, and advocates on topics including: student records, discipline, related services, due process, least restrictive environment, and appropriate educational placements.

530. School District Leadership 2 credits. A study of concerns and issues related to educational leadership and administration at the district level, including relationships between the superintendent and the school board, community and school district staff.

532. Staff and Program Evaluation 2 credits. A study of the evaluation of staff, including teachers, administrators, support personnel, and boards, and for purposes of accreditation, the evaluation of components that support the curriculum, procedures, processes, and instruments will be identified and analyzed.

533. Collective Negotiations 2 credits. A study of the collective bargaining process in the field of education. Includes topics such as contract language, planning for negotiations, bargaining strategies, impasse and arbitration, contract maintenance, grievance procedures, and results of the negotiations.

541. Introduction to Higher Education Administration. 3 credits. An overview of the administrative structure of America’s colleges and universities. Topics include roles of state and federal government, governing boards, institutional organization and culture, types of institutions, faculty, students, research about higher education, and the profession of administration.

542. Curriculum in Higher Education 2 credits. A study of processes for planning, implementing, and evaluating curriculum within institutions of higher education. Topics will include historical perspectives on curriculum in higher education, governance systems related to curriculum development and adoption, and issues of current interest and concern.

541. Academic Administration in Higher Education 3 credits. The roles and responsibilities of academic administration in higher education. Topics include the major academic roles (chairperson, dean, chief academic officer), curriculum and instruction, program evaluation, assessment, planning, faculty workload and evaluation, and the profession of administration.

542. Higher Education Law 2 credits. An overview of the legal issues that concern college and university personnel. Pertinent federal and state statutes as well as case law will be used to instruct about legal rights and responsibilities of university and college administrators. The legal relationships between the institution and the faculty, the student, the state government, and the federal government will be explored.

543. Higher Education Policy and Finance 2 credits. A study of the relationship between fiscal policy and decision making in institutions of higher education. The sources of revenue for higher education will be studied as well as the budgeting, accounting, and auditing procedures applicable to nonprofit institutions. The college administrator's role in guiding the fiscal welfare of an institution of higher education will be explored.

544. Higher Education Student and Support Services 2 credits. An overview of the organization and functions of student and support services within institutions of higher education. Students will gain an understanding of the administrative issues related to career services, student counseling, enrollment services, student activities, health services, student organization, and other institutional units which serve the needs of students at a college or university.

589. Seminar in Higher Education Leadership 1 to 4 credits. SU grading only.

591. School Community Relations 2 credits. Study of the responsibility of college and university personnel to the community. Pertinent federal and state statutes as well as case law will be used to instruct about legal rights and responsibilities of university and college administrators. The legal relationships between the institution and the faculty, the student, the state government, and the federal government will be explored.

592. Educational Systems and Planning 2 credits. A study of the planning process including topics such as establishing goals, assessing needs, identifying and generating, analyzing, and selecting alternatives. Processes and techniques in planning will be emphasized.

593. Administration and Organizational Behavior I 3 credits. A study and critique of selected theories and research in administration and organizational behavior including topics such as leadership, formal and informal structure, communication, change...
and intervention, motivation and morale, interpersonal relations and conflict management, small-group processes, and personality, values, and ethics.

574. Administration and Organizational Behavior I. 3 credits. A continuation of Administration and Organizational Behavior I. Provides the student with the opportunity to design and carry out an original field study project in organizational behavior, participate in critiquing studies designed and completed by fellow students, and engage in individualized study in a topic area related to behavior in organizations.

575. Education and Public Policy. 3 credits. A study of the development of policy issues, analysis of policy formation, implementation analysis, and structures and actors in policy activity.

579. Special Topics in Educational Leadership. 1 to 4 credits. Prerequisite: Consent of instructor or advisor. Exploration of special topics in the study of educational leadership not regularly included in available course offerings. May be repeated for different topics.

593. Internship in Educational Leadership. 1 to 8 credits. Prerequisites: Appropriateness of foundational, cognate, and major area coursework and consent of the advisor and instructor. This is a culminating experience primarily for Specialist Diploma and doctoral students. May be repeated.

597. Readings in Educational Leadership. 1 to 4 credits. Prerequisites: Consent of advisor and instructor. Designed primarily for advanced graduate students. May be repeated for different topics.

599. Individual Research in Educational Leadership. 1 to 4 credits. Prerequisites: Consent of advisor and instructor. May be repeated.

Department of Teaching and Learning

The Department of Teaching and Learning prepares teachers for Pre-K-12 schools and for higher education: offering bachelors, masters, and doctoral degrees. A strong commitment to the intertwined processes of teaching and learning is evident throughout all graduate level programs. The personalization of reflective practice within a community of supportive students and faculty is emphasized. Scholarly inquiry and its application are encouraged. Support is available for the development of interdisciplinary perspectives and the cultivation of collaborative activities. Practices which promote progressive education, affirm diversity, and provide experiences whereby learners construct their own knowledge are highly valued.

Programs Offered

<table>
<thead>
<tr>
<th>Program</th>
<th>Degrees Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Childhood Education</td>
<td>M.S.</td>
</tr>
<tr>
<td>Education: General Studies</td>
<td>M.S.</td>
</tr>
<tr>
<td>Elementary Education</td>
<td>M.Ed., M.S.</td>
</tr>
<tr>
<td>Reading Education</td>
<td>M.Ed., M.S.</td>
</tr>
<tr>
<td>Special Education</td>
<td>M.Ed., M.S.</td>
</tr>
<tr>
<td>Teaching and Learning</td>
<td>Ed.D., Ph.D.</td>
</tr>
</tbody>
</table>

See the Education departmental section for information regarding admissions, review processes, scholarly tools, thesis and independent study reports, comprehensive examinations, and study of higher education.

Early Childhood Education

Program Description

The focus in this M.S. program in Early Childhood Education is on the advanced preparation of teachers and leaders in the field of Early Childhood Education. The program addresses the education of children age 3 through grade 3 by concentrating on the study of children ages 3-8 and the implications such study holds for educational practice. Those pursuing this program will be prepared as professional teachers/leaders in a variety of early childhood settings, including public and private schools (K-grade 3), Head Start programs, child development and child care centers, and other programs relating to the education of children.

Admission Requirements

An undergraduate degree in early childhood education, child development, elementary education, or a related field.

Refer to the Admissions section of the Graduate catalog of this catalog for additional information on admission requirements and application procedures.

Degree Requirements

A detailed description of the M.S. degree can be found in the Degree Requirements section. The M.S. degree in Early Childhood Education is available in two options: the thesis option and the non-thesis option. The program of study is flexible and is designed with the student’s advisor (in the case of a non-thesis option) or with the student’s thesis committee (in the case of the thesis option) and consists of a minimum of 30 credit for the thesis option and 32 credits for the non-thesis option. Required and elective courses are as follows:

<table>
<thead>
<tr>
<th>Major</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&amp;L 510 Early Intervention for Children with Special Needs</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 523 Home School Relations</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 526 Play in Development and Early Childhood Education</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 527 Curricular Foundations in Early Childhood Education</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 529 Language Development in Children</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 530 Foundations of Reading Instruction</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 547 Young Children’s Thinking</td>
<td>2</td>
</tr>
<tr>
<td>*Electives (thesis option)</td>
<td>3-5</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>(non-thesis option)</td>
<td>9</td>
</tr>
<tr>
<td>T&amp;L 997 Independent Study (non-thesis option/Final Project</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 998 Thesis (thesis option)</td>
<td>4-6</td>
</tr>
</tbody>
</table>

Scholarly Tools

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFR 509 Introduction to Educational Research</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 569 Action Research</td>
<td>3</td>
</tr>
<tr>
<td>*Electives: The student will choose electives in consultation with his/her advisor or committee. Students who have not had direct experience working with young children should take T&amp;L 580 Practicum: Early Childhood Education. If students do not have a teaching certificate, they are required to take EFR 509 Foundations of Educational Thought. Students can also take additional electives in Reading Education, Special Education, Social Work, or Educational Leadership.</td>
<td></td>
</tr>
</tbody>
</table>

Elementary Education

Program Description

The focus of the master’s degree programs in elementary education is on the advanced professional preparation of the classroom teacher. Courses, independent study, and practicum experiences are available in many of the curriculum areas. Goals of the program are to encourage teachers to work more intensely with individuals, be more effective as classroom teachers, and make a broader contribution in the education field.

Licensed teachers with a bachelor’s degree in elementary education may pursue either the Master of Education or the Master of Science. Non-licensed individuals who have earned a bachelor’s degree in a field of study other than education may only pursue the Master of Science.

Admission Requirements

1. Teacher Licensure for the M.Ed.
2. Teacher Licensure or a baccalaureate degree for the M.S.

Refer to the Admissions section of the Graduate catalog for additional information on admission requirements and application procedures.

Degree Requirements

A detailed description of the M.Ed. the M.S. degrees may be found in the Degree Requirements section. Scholarly tool requirements are described in the Education departmental section.
Master of Education

Licensed persons are eligible for this degree. The major portion of the program includes coursework that addresses practical aspects of teaching at the elementary school level—literacy development, mathematics, science, social studies, curriculum development, and working with families. Available courses focus on the relationship between theories of child development and educational practices designed to foster that development. Practicum experiences can be arranged for those students desiring direct involvement with children. The program culminates in a final project or thesis.

Master of Science

This degree is available in two tracks. Track I, either thesis or non-thesis, is open to licensed or non-licensed persons who wish to follow a research oriented program of study. Track II requires a minimum of five credits of scholarly tool coursework and allows a maximum two credits of readings.

Track II, available only in the non-thesis option, provides opportunity for non-certified persons to study Elementary Education at the graduate level. Track II requires a minimum of six credits of coursework in Foundations of Education.

Sample Program of Study, M.Ed., Elementary

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&amp;L 590</td>
<td>Writing in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 518</td>
<td>Science in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 519</td>
<td>Social Studies in the Elementary School</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 521</td>
<td>Mathematics in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 530</td>
<td>Foundations of Reading Instruction</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 569</td>
<td>Action Research</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 597</td>
<td>Independent Study/Final Project</td>
<td>2</td>
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</table>

Sample Program of Study, M.S., Elementary

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&amp;L 518</td>
<td>Science in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 519</td>
<td>Social Studies in the Elementary School</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 521</td>
<td>Mathematics in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 530</td>
<td>Foundations of Reading Instruction</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 569</td>
<td>Action Research</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 597</td>
<td>Independent Study/Final Project</td>
<td>2</td>
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</tbody>
</table>

Scholarly Tools (Track I only)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFR 509</td>
<td>Introduction to Educational Research</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 569</td>
<td>Action Research</td>
<td>3</td>
</tr>
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</table>

Scholarly Tools (Track II, only)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFR 500</td>
<td>Foundations of Educational Thought</td>
<td>3</td>
</tr>
<tr>
<td>EFR 506</td>
<td>Multicultural Education</td>
<td>3</td>
</tr>
</tbody>
</table>

Reading Education

Program Description

These programs are designed for educators or other professionals interested in the study of individual readers and writers and reading/language arts curriculum and assessment. A unique feature of!this program is that students become engaged in teaching literacy in a supervised practicum experience.

Certified teachers with a bachelor’s degree in education may pursue either the Master of Education or the Master of Science. Non-certified individuals who have earned a bachelor’s degree in a field of study other than education may only pursue the Master of Science.

Admission Requirements

1. Teacher Licensure or
2. Minimum of 8 credit hours of social sciences/humanities

Degree Requirements (for certified teachers)

1. Six (6) credits in foundations.
2. Six (6) credits in curriculum.
3. Six (6) credits in scholarly tools.
4. Nine (9) credits of cognate or minor

Degree Requirements (for those not certified)

1. Nine (9) credits in foundations.
2. Three (3) credits in curriculum.
3. Six (6) credits in scholarly tools.

General Studies

Program Description

This M.S. degree program (thesis or non-thesis) is designed for both the licensed secondary teacher who seeks a major in education and a minor in another field, and those who wish to pursue a graduate degree in education that will inform broadly their own professional practice. This degree does not require, nor lead to, teacher licensure.

For licensed teachers the major portion of the program of study must include six credits in foundations, six credits in curriculum and six credits in scholarly tools. For those who are not licensed teachers, the major portion of the program of study must include nine credits in foundations, three credits in curriculum and six credits in scholarly tools. The program culminates in a final project/independent study or thesis.

The cognate for this degree should include academic coursework which provides broad support for the major. The minor must be obtained in a department that offers a graduate degree.

Admission Requirements

1. Teacher Licensure or
2. Minimum of 8 credit hours of social sciences/humanities

Degree Requirements (for certified teachers)

1. Six (6) credits in foundations.
2. Six (6) credits in curriculum.
3. Six (6) credits in scholarly tools.
4. Nine (9) credits of cognate or minor

Degree Requirements (for those not certified)

1. Nine (9) credits in foundations.
2. Three (3) credits in curriculum.
3. Six (6) credits in scholarly tools.
The M.S. degree in Reading Education is available in two tracks. Track I, either thesis or non-thesis, is open to licensed persons who wish to follow a research oriented program of study. Track I requires a minimum of five credits of scholarly tool coursework and allows a maximum of two credits of readings. Track II, available only in the non-thesis option, provides opportunity for non-licensed persons to study Reading Education at the graduate level. Track II requires a minimum of six credits of coursework in Foundations of Education.

### Sample Program of Study, M.Ed., Reading

<table>
<thead>
<tr>
<th>Major</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&amp;L 524 Reading in the Content Area</td>
<td>2</td>
</tr>
<tr>
<td>T&amp;L 530 Foundations of Reading Instruction</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 534/583 Basic Reading Diagnosis &amp; Remediation/Clinic</td>
<td>4</td>
</tr>
<tr>
<td>T&amp;L 590 ST: Literature in the Classroom</td>
<td>3</td>
</tr>
<tr>
<td>T&amp;L 997 Independent Study</td>
<td>2</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Educational Foundations</td>
<td>3</td>
</tr>
<tr>
<td>EFR 500 Foundations of Educational Thought</td>
<td>3</td>
</tr>
<tr>
<td>EFR 506 Multicultural Education</td>
<td>3</td>
</tr>
</tbody>
</table>

### Sample Program of Study, M.S., Reading

<table>
<thead>
<tr>
<th>Major</th>
<th>Credits</th>
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### Educational Foundations

- EFR 500 Foundations of Educational Thought: 3 credits
- EFR 506 Multicultural Education: 3 credits

### Special Education

#### Program Description

**General Purpose**

The focus of the program is the further preparation and certification of specialists in an area of special education. This involves the ability to diagnose children and young adult’s difficulties, plan curricular approaches, and develop and deliver instructional programs with the help of other pertinent professionals in the school.

**Objectives**

1. To introduce students to concepts, practices, and approaches that concern children with school-related difficulties.
2. To provide a practicum setting that encourages students to both apply what they have learned and to further refine diagnostic and prescriptive skills with children and young adult’s in a specialist area, i.e., learning disabilities, emotional disturbance, mental retardation, early childhood special education, visual impairment or cross-categorically, i.e., special education strategist.
3. To encourage within students an inquiring and questioning attitude toward their profession.
4. To encourage students to view their specialty within the broader context of the school setting. Included here would be a familiarization with issues, trends, and research that mark contemporary education.
5. To enable students to become conversant with literature of the field and to encourage them to be life-long learners.

#### Degree Program vs. Credential Program

Though not required, it is desirable that students enrolling for graduate level courses have a record of successful teaching experience. Application to take graduate level courses for both the degree (master’s) and non-degree (credentials) programs must be made to the Graduate School. A student may elect to be a non-degree or degree student, depending upon his/her professional goals. It is conceivable that a student may wish only to be credentialed in an area of special education without working toward a master’s degree. In this case, he/she would remain as a non-degree student and take the courses outlined by the advising handouts for each program available online at: [http://www.und.nodak.edu/dep/tl/specedu/](http://www.und.nodak.edu/dep/tl/specedu/).

### Areas of Study Offered

A credential and/or a Master’s Degree can be obtained in these areas:

- General Special Education
- Early Childhood Special Education
- Visual Impairment
- Special Education Strategist
- Learning Disabilities
- Emotional Disturbance
- Developmental/Cognitive Disabilities (MR)*
- Gifted/Talented

*NDPDI will refer to this as a MR credential.

A certificate in the area of autism spectrum disorder is also available. For additional information go to our web site at: [http://www.und.nodak.edu/org/graain/](http://www.und.nodak.edu/org/graain/).

### Master of Education in Special Education

#### Prerequisites

- Certification in Early Childhood*, Elementary, Middle or Secondary Education*

*Early Childhood and Secondary Education majors must complete coursework in elementary reading and math methods.

#### Major

Includes a minimum of 18 credits of Special Education coursework, plus two credits of T&L 997. Courses can be chosen from those listed on the advising handouts for the seven major areas. See the Special Education web site at: [http://www.und.nodak.edu/dep/tl/specedu/](http://www.und.nodak.edu/dep/tl/specedu/) for specific course listings.
Cognate Area: At least six semester credits in a related area such as inclusive practices, reading, counseling, another disability area, or administration.

Foundations of Education: Six semester credits with EFR 500 Foundations of Educational Thought (3 cr.) being required. The second EFR course can be chosen from those offered or approved by the Department of Educational Foundations and Research (EFR).

Master of Science in Special Education

Track #1
Prerequisites: Same as Master of Education requirements
Major: Same as Master of Education requirements
Scholarly Tool: At least five credits in Quantitative and/or Qualitative Methods
Minor or Cognate Option: If the minor/cognate option is selected, the 27 credit major is reduced by the number of credits in the minor or cognate.
Minor: An approved minor of at least ten credits from one department with a graduate program other than the Department of Teaching and Learning. Courses must be selected from those listed in the graduate catalog. The minor is signed by the chairperson of the minor department and will be listed as a minor on the transcript.
Cognate: At least nine credits in one area of concentration (other than Special Education) or in more than one area (300-400 level courses in departments outside of the Department of Teaching and Learning which have graduate programs are acceptable). The cognate is not listed on the transcript.

Track #2
Intended for non-certified personnel only. This program is the same as Track #1 except that six credits of Foundations of Education are required, rather than five credits of Scholarly Tools.

Field Experience
There are three types of field experiences in the graduate program. For students seeking a teaching license, field experience is required. The Special Education Field Experience Request Form must be completed prior to enrollment in a field experience. Forms are available from the program area or the website. Please note that regardless of the internship option selected, each intern completes the same set of required, specialization-specific assignments. At the graduate level, field experience is completed in one of three ways:
- Traditional Internship
- On-the-Job Internship
- Resident Teacher Internship

All special education majors must complete 300 clock hours of field experience to meet CEC requirements for their first special education license or credential. This means all special education majors must have a total of 5 credits, i.e., with 60 clock hours for each credit, across T&L 580 and T&L 584.

Traditional Internship
This internship option leads to an initial special education credential that is added to a North Dakota license in early childhood, elementary, middle school, or secondary education.

On-the-Job Internship
This internship option is designed for our advanced special education graduate students, i.e., students with either undergraduate or graduate teaching licenses or credentials, respectively, in special education. These students are already special educators adding an additional specialization credential, i.e., LD, ED, DCD (MR), ECSE, or VI, to their special education teaching license. These students complete this internship in either fall or spring semesters while employed. A detailed plan must be submitted articulating how they will meet the internship requirements while working. This option requires an additional application to the program area faculty. The Criteria for On-the-Job Internships in Special Education Form is available from the program area or on the web site.

Resident Teacher Program
The Resident Teacher Program in Special Education provides a group of inexperienced teachers with support in entering the special education teaching profession. Resident teachers have an opportunity to earn a M.Ed. in Special Education through on-campus coursework and on-the-job field experience in a North Dakota school district.

Each resident teacher assumes full responsibility for a special education caseload and must be certified to teach in North Dakota. Resident teachers will earn stipends and a waiver of University tuition for a major portion of work toward the master’s degree. (Residents are responsible for university fees each semester.) Resident teachers will enroll in graduate study during the summer prior to assuming teaching responsibilities and may complete their degree work the following summer.

Experienced resident mentors from the school district enhance the Resident Teacher Program. These mentors coach and provide support to the resident teachers and work with the University mentors. The resident mentors will offer resident teachers consultation, demonstration teaching, feedback, and support.

The University mentor represents the University of North Dakota’s interests in the Resident Teacher Program. This individual supervises the resident teachers and offers the resident mentors consultation and support. To qualify as a resident teacher, the following conditions must be met:
1. Complete an undergraduate degree in Elementary, Middle Level or Secondary Education before residency begins.
2. Qualify for teacher certification in North Dakota by May 30.
3. Have a minimum overall GPA of 2.75, with preference given to those with a 3.00 GPA or better.
4. Submit an application by March 15 to Lynne Chalmers, Department of Teaching and Learning, University of North Dakota, Box 7189, Grand Forks, ND 58202-7189 (available at: http://www.und.nodak.edu/dep/01specedu)
5. Apply for the M.Ed. in Special Education. Application is made to the Graduate School at the University of North Dakota (see admissions process below). This is a separate application from the one in #4 and requires a $30 application fee.
6. Be available for full-time graduate study during the summer session immediately preceding the residency.

Admissions Process
The graduate application process consists of the following:
1. Application form (must be in to the Graduate School by March 15th for spring admission and August 15th for fall admission)*
2. Application fee ($30)
3. Three letters of recommendation*
4. Two official transcripts from each institution attended
5. In-house writing assignment and interview (see below)

Note: Applicants to the master’s program in special education are not required to submit the “Statement of Goals and Objectives” or the “Personal Statement.”

Plan A (Students Able to Come to Campus)
One day is set aside each semester for admissions interviews and in-house writing sessions. The applicant will come to campus on the designated day (in September for fall admissions and in April for
Teaching and Learning

Doctoral Program

Program Description

The Ph.D. and Ed.D. programs in Teaching and Learning are designed to prepare individuals for instructional leadership and teaching positions in schools, colleges and universities, and public or private agencies. Historically, the program has offered students four major options: Elementary Education/Early Childhood Education, Secondary/Higher Education, Special Education and Research Methodologies. Pending approval the titles will be changed and three major options will be: Curriculum and Instruction (preparation of individuals who may serve as curriculum specialists and consultants), Higher Education (preparation of individuals to teach at the college or university level), and Research Methodologies (preparation of individuals to conduct research in schools, colleges and universities, and in public or private agencies). These proposed major titles more accurately reflect the programs of study pursued by graduates of the Teaching and Learning doctoral program. Core requirements for each of the three options can be found in the Teaching and Learning Doctoral Handbook and on the departmental website.

Students are specifically admitted to the Ed.D. or the Ph.D. program. The Ed.D. degree emphasizes professional practice and educational foundations and theory. The Ph.D. degree emphasizes research, creative scholarship, and educational theory. Differences in the program of study structure of the two degrees reflect these differences in emphasis.

The doctoral student and advisory committee design the doctoral program of study to meet individual needs within the framework of guidelines set by the Graduate School and by the program faculty. Graduate School requirements for the Doctor of Philosophy (Ph.D.) and the Doctor of Education (Ed.D.) are stated in the Degree Requirements section.

Admission Requirements

Admissions to the doctoral program in Teaching and Learning will occur in March, July, and November of each year with applications due to the Graduate School by February 15th, June 15th, and October 15th respectively. The Graduate School will notify students by mail of their admission status within two weeks of the Admission Committee’s decisions.

Applicants should anticipate that the materials they submit will be held to high standards with the following basic expectations: Graduate grade point averages above 3.5; excellent writing skills; three references that speak to character, academic potential, and professional accomplishments; and clear goals that can be met by our program as specified in the Graduate Catalog.

Applicants interested in presenting a more complete picture of their strengths while entering a competitive field should submit additional evidence such as: a) any published writing; b) a detailed description and analysis of a day in a classroom or other professional setting; c) one of the following standardized test scores: The Advanced Graduate Record Examination, Miller Analogies Test, Graduate Record General Examination (verbal, quantitative, analytical). Applicants meeting the basic expectations outlined above will be invited to participate in a personal interview with the admissions committee. Students at a great distance may opt for a telephone interview.

Students with a master’s degree in the content field and without previous background in the study of education are eligible for admission to the Ph.D. program with a higher education option.

Degree Requirements

Doctor of Philosophy

The program of study shall include the following:

1. A major area which must be no less than half of the total number of hours for the degree. The major coursework includes a dissertation of at least 10 credit hours, a minimum of six credits in the Foundations of Education, and a minimum of 12 credits of scholarly tools. Scholarly tool options are described in the Education departmental requirements section.

2. A minor or cognate in a supporting area of at least 12 credit hours.

3. One of three residency options described in this departmental section.

Doctor of Education

The program of study shall include the following:

1. A major area consisting of a minimum of 58 credit hours in higher education, curriculum and instruction, or research methodologies. The major coursework includes a dissertation of 10 credits, a minimum of 12 credits in the Foundations of Education, and a minimum of 6 credits of scholarly tools. Scholarly tool options for the doctoral students in education are described in the Education departmental requirements section of this catalog.

2. A minor or cognate in a supporting area of at least 12 credit hours.

3. One of three residency options described below.

Residency Requirements for Doctoral Programs

“The purpose of residency is to provide an opportunity for sustained and concentrated intellectual effort, to provide for immersion in a research environment, and to permit extensive interaction with fellow students and faculty of the major department.”

The residency for programs in education is designed to provide the student with the experiences outlined by the Graduate School. It is expected that students will engage in serious scholarship and will reflect on their learning and experiences. The expectation is that the students will integrate their doctoral study in order that the program of study they pursue will become a holistic and unified experience. (The residency option is normally declared on the student’s program of study.) The education faculty have outlined some of the condi-
519. Social Studies in the Elementary School. 2 credits. Content, methods, curricula, organization, and curriculum problems in the field of social studies in the elementary school levels.

520. Curriculum and Instruction in Elementary Schools. 4 credits. A study of processes for planning, implementing, and evaluating curriculum and improving instruction in elementary schools.


524. Reading in the Content Areas. 2 credits. Pre- or co requisite: CTL 530. How and why reading should be taught in the content areas (i.e. Social Studies, Science, Math, etc.) Research studies in the field of content reading and a variety of instructional practices are reviewed.

526. Play in Development and Early Childhood Education. 2 credits. The play of children has long been viewed as essential to developmental processes. In addition, education has recognized the need to incorporate play into programs. This course explores the relationship of play to development (cognitive, physical, and emotional), and the way in which play has been incorporated into pre-kindergarten settings.

527. Curricular Foundations in Early Childhood Education. 3 credits. This course examines the historical, philosophical, cultural, race, and class and gender influences on curriculum in early childhood, including the philosophies and missions of the Department of Teaching and Learning.

529. Language Development in Children. 3 credits. This course provides foundational information and a sense of appreciation for language, and information necessary for the development of language rich interactions with young children.

530. Foundations of Reading Instruction. 2 credits. A survey of developmental reading instruction. Emphasis is placed on the psycholinguistic process of teaching and learning, critiquing historical and current research, and the instructional approaches each supports.

531. Teaching of Reading in the Primary Grades. 2 credits. Pre- or corequisite: TL 530. A study of the reading process in the primary grades including essential factors of readiness for learning to read, teaching techniques, and approaches to beginning reading instruction.

533. Reading in the Secondary School. 2 credits. Pre- or corequisite: TL 530. Development of reading-study skills in the content subject areas and reading skill development.

534. Basic Reading Diagnosis and Remediation. 2 credits. Pre- or corequisite: TL 530. A study of the reading process in the intermediate grades with emphasis on reading as a tool for learning.

535. Advanced Reading/Language Arts Diagnosis and Remediation. 2 credits. Prerequisite: TL 530 and 534. Analysis of interrelationships of learning difficulties in language arts areas and procedures for remediation.

536. Teaching and Supervision of Elementary Language Arts. 3 credits. Pre- or corequisite: TL 530. Considers the objectives of the elementary language arts program, methods of instruction, and current curricular trends. Recent research is read and critiqued.

538. Supervision of Student Teaching. 2 credits. For supervisors and directors of student teaching in colleges and cooperating schools. Principles and practices on how to provide the most beneficial experiences for student teachers.

539. College Teaching. 3 credits. Explores learning styles and teaching styles, the components and responsibilities involved in college teaching, methods of teaching and motivating students, and current issues related to instruction in the college classroom.

540. Theories and Philosophies of Curriculum. 3 credits. A study of a processes for planning, implementing, and evaluating curriculum.


543. The Junior High School. 2 credits. Philosophy, special functions, organization, and administration of the American Junior High School.

545. Adult Learners. 3 credits. This course will cover theories of adult development, current research on adult learners, ways of assessing the needs and interests of adult learners, and ways of creating environments in which adult learners can thrive.

546. Young Children’s Thinking. 2 credits. Students in this course will study the thinking of young children, ages 0-8, through the lenses of a number of theoretical perspectives and through case studies of children. Developmental, cultural, personal, and gender similarities/differences in thinking will be examined.

547. Seminar. 1 to 4 credits. The seminar will focus on a specific topic relating to teaching and learning. The specific content will vary depending upon student needs and faculty resources. May be repeated.

550. Introduction to Learning and Behavior Problems. 3 credits. Characteristics of children and youth who are learning disabled, the psychosocial and biologic perspectives, models for delivery of service.


552. Inclusive Methods. 2 credits. The study of a variety of methods and materials for teaching children and youth with learning and behavior problems in the general education classroom.

553. Collaborative Relationships: Home, School and Community. 3 credits. A course appropriate for anyone working with families, early childhood educators, general educators, special educators, related service personnel, administrators and outside agency personnel. Topics covered include: (1) the various models of collaboration and consulta-
tion and the stages of each, (2) communication skills, (3) problem-solving, (4) conflict management, (5) diverse perspectives, (6) information collection procedures, (7) supervisory skills, (8) family characteristics and structure across the lifespan, (9) family focused intervention; (10) school choices, and (11) school issues such as poverty, domestic vio-

lence, bullying, and school violence.

5. Advanced Methods: 3 credits. The study of specific strategies, methods, and materials for working with students with emotional/behavioral disorders.

555. Advanced Methods ED: 3 credits. The study of specific strategies, methods, and materials for working with students with emotional/behavioral disorders.

556. Introduction to Autism Spectrum Disorder: 2 credits. Prerequisites: Completed degree from a related field of study, e.g., education, special education, speech and language pathology, educational therapy, physical therapy, social work, nursing, medici-

ne, or science who have the equivalent of 315. Education of the Exceptional Students and are completing an undergraduate degree from a related field of study. This is the introduc-
tory course in a sequence of interdisciplinary courses focusing on autistic spectrum disorder. Its central purpose is to encourage parents and caregivers of individuals with autistic spectrum disorder to engage in reflective thinking about and critical analysis of the many and varied issues. (a) identification, educational placement, effective treatments, voca-
tional training, related to the provision of quality lifelong supports for these individuals.

561. Methods for Autism Spectrum Disorder: 2 credits. Pre- and corequisites: T&L 560. This is the second required course in a sequence of interdisciplinary courses focusing on autistic spectrum disorder (ASD). Its central purpose is to encourage caregivers and parents who work with persons with ASD to engage in reflective thinking about and critical analysis of the many and varied spectrum issues. Students will learn strategies and methods commonly applied in prac-
tice with persons with ASD or frequently discussed in the professional literature base.

562. ASD: Supports Across the Lifespan: 2 credits. Pre- and corequisites: T&L 560 and 561. This is the third required course in a sequence of interdisciplinary courses focusing on autistic spectrum disorder (ASD). Its central purpose is to explore the role and future of medicine and medically oriented interventions for persons with ASD. Included in the course are discussions of issues related to conducting wellness examinations with persons with ASD or commonly seen medical issues. Students will learn about medication treatments currently available and those that will become available in the future.

563. Structured Teaching: 2 credits. Pre- and corequisites: T&L 560 and 561. This is an elective course in the sequence of interdisciplinary courses focusing on autistic spectrum disorder (ASD). Its central purpose is to encourage parents and caregivers of individuals with ASD to engage in reflective thinking about and critical analysis of the many and varied spectrum issues. Students will learn strategies and methods currently applied in practice with persons with ASD or frequently discussed in the professional literature base.

564. Methods for Students with Asperger Syndrome: 2 credits. Pre- and corequisites: T&L 560 and 561. This is an elective course in the sequence of interdisciplinary courses focusing on autistic spectrum disorder (ASD). Its central purpose is to encourage parents and caregivers of individuals with ASD to engage in reflective thinking about and critical analysis of the many and varied spectrum issues. Students will learn strategies and methods currently applied in practice with persons with ASD or frequently discussed in the professional literature base.

565. Action Research: 3 credits. Prerequisite: graduate status. The study of the philosophy and methods of action research. Emphasis is focused on analysis and re-

flexion on one’s teaching for the purpose of improvements in student learning. Students will learn strategies and methods currently applied in practice with persons with ASD or frequently discussed in the professional literature base.

570. History of Higher Education in the U.S.: 3 credits. Study of major events

in the history of higher education in the United States with emphasis on the role and impact of individuals and institutions. Major emphasis will be placed on the role and impact of higher education in the United States.

584. Internship in Education: 1 to 8 credits. Prerequisites: Appropriate founda-
tional, cognate, and major area coursework and consent of the advisor and instructor. This is a culminating experience primarily for Sixth year and Doctoral students. The intern-
ships will be identified in one of the following sub-areas: (A) Educational Administration, (B) Special Education, (C) Curriculum, (D) Educational Research, or (E) Teacher Educa-
tion. May be repeated.

590. Special Topics in Education: 1 to 4 credits. Prerequisite: Consent of instruc-
tor or advisor. Exploration of special topics in the study of education not regularly in-
cluded in available course offerings. May be repeated for different topics.

591. Readings in Education: 1 to 4 credits. Prerequisites: Consent of advisor and instructor. Designed primarily for advanced graduate students. May be repeated for dif-
terent topics.

593. Independent Projects: 1-4 credits.

596. Individual Research in Education: 1 to 4 credits. Prerequisites: Consent of advisor and instructor. May be repeated.

421. Transition to Adult Life: 3 credits.

422. Education of Gifted and Talented: 2 credits.

423. Assessment Program Planning/Special Needs Students: 3 credits.

454. Organization, Administration, and Supervision in Early Childhood Edu-
cation: 2 credits.

455. Comparative Approaches to the Education of Young Children: 3 credits.

493. Problems in Special Education: 2 to 5 credits.

Electrical Engineering

Professors Faruque, Heckmann (Graduate Director), Johnson (Chair), Miles, Salehfar, Schultz and Won

Program Description

The Department of Electrical Engineering offers graduate pro-
grams leading to the Master of Engineering (M.Eng.) and the Master of Science (M.S.) degree. The department maintains strong research emphases in systems engineering, controls, power systems, wireless telecommunication systems, and applied electromagnetics. The M.S. degree is offered under both the thesis and non-thesis options. The department participates in the Combined Engineering Degree pro-
gram and the school-wide Engineering Ph.D. program. The research programs, laboratory facilities, close student-faculty interaction, and strong academic advising facilitate an excellent environment of scholar-
ly activity and provide the faculty and graduate students with the knowledge, aptitudes, and attitudes which prepare them for corpo-
rate and government positions and for further opportunities in re-
search and development.

The department offers combined Bachelor of Science in Elec-
trical Engineering (BSEE)/Master of Science (with a major in Elec-
trical Engineering) and BSEE/Master of Engineering (MEng) de-
gree programs. The intention of the combined programs is to allow qualified students to complete requirements for both degrees in one year beyond that required to receive the baccalaureate degree. See Combined Degree Program under the School of Engineering and Mines section for additional details.

Admission Requirements

Master of Science

1. Bachelor of Science degree in Electrical Engineering or closely related field. Students holding B.S. degrees in other fields, e.g., physics, mathematics, and computer science, may be admitted to Provisional or Qualified status until undergraduate deficiencies in electrical engineering have been satisfied.

2. An overall undergraduate GPA of at least 2.75 or a GPA of

at least 3.00 for the last two years.

3. Applicants holding degrees from non-ABET accredited pro-
grams/universities must submit scores from the General Test of the Graduate Record Examination.
Master of Engineering

1. Bachelor of Science degree in Electrical Engineering or closely related field. Students holding B.S. degrees in other fields, e.g., physics, mathematics and computer science, may be admitted to Provisional or Qualified status until undergraduate deficiencies in electrical engineering have been satisfied.

2. An overall undergraduate GPA of at least 2.5 or a GPA of at least 2.75 for the last two years.

3. Applicants holding degrees from non-ABET accredited programs/universities must submit scores from the General Test of the Graduate Record Examination.

Combined Program

Admission to the Combined Program, either BSEE/MS or BSEE/MEEng, requires an overall undergraduate GPA of at least 3.0 at the time of admission.

Degree Requirements

There are no specific departmental degree requirements beyond those required for the Master of Science or Master of Engineering degrees.

Courses

503. Statistical Communications Theory and Signal Processing I. 3 credits. Prerequisite: EE 411 or consent of instructor. Theory of time series analysis of random signals as applied to signal processing is emphasized.

504. Statistical Communications Theory and Signal Processing II. 3 credits. Advanced methods of signal detection including linear parameter estimation and nonlinear estimation of parameters. Detection of signals and estimation of signal parameters from a probability point of view will be emphasized.

505. Control Systems II. 3 credits. Prerequisite: EE 405. Advanced topics in control systems including nonlinear systems, robust control, optimal control, and pole placement techniques, selective topics from the state of the art.


507. Spacecraft Systems Engineering. 3 credits. Space environment, dynamics of spacecraft, celestial mechanics, mission planning, and systems engineering methodology.

508. Decision Systems. 3 credits. Prerequisite: EE 314. Systems and networks will be designed to work in an uncertain environment. Systems will be optimized using Neural Networks and Fuzzy Logic concepts.

509. Signal Integrity. 3 credits. Prerequisite: EE 409 or consent of instructor. Fundamental concepts of signal integrity are presented. Topics include propagation of digital signals, electrical noise, and system timing. On demand.

511. Industrial Electronics. 3 credits. Prerequisite: EE 321. Application methods and problems of electronic circuits in the manufacturing and power industries.

518. Digital Computer Logic. 3 credits. Prerequisite: EE 451 or consent of instructor. Logic design analysis of digital computers with some applications.

520. Electronic Computing Systems. 3 credits. Prerequisites: EE 201 and EE 421. Design of bit slice computers, simulation of computers' special purpose controller design, advanced microprocessor design and use.

521. Discrete Real Time Filtering. 3 credits. Prerequisite: EE 314. Modern methods of high speed digital signal processing will be studied. Techniques which will be used include the recursive and nonrecursive discrete-time filters and the Fast Fourier Transform. The digital computer will be used to implement these filters.


525. Electromagnetic Fields. 3 credits. Prerequisite: EE 316. Static electric and magnetic fields; field mapping; and applications to transmission lines, wave guides, and antennas.

532. Antenna Theory. 3 credits. Prerequisite: EE 316 or consent of instructor. Physical principles underlying antenna behavior and design as applied to antennas.

536. Optical Fiber Communications. 3 credits. Prerequisite: EE 434 or consent of instructor. Propagation in optical fibers, optical receivers, amplifiers, detectors, sources, transmission links, noise consideration, optical fiber communication systems, applications and future developments.

537. Graduate Cooperative Education. 3 credits. Prerequisites: Approved status, 3.00 GPA, completed a minimum of 9 credits of the program of study, and approval of the department. A practical research experience with an employer closely associated with the student’s academic area. A written report which includes a literature survey and research findings and an oral presentation are required.

570. Seminar. 1 credit. Open to qualified advanced undergraduate students and graduates.

596. Advanced Electrical Engineering Problems. Credit to be arranged. Open by permission to graduate students and qualified seniors. Students work under the supervision of a member of the staff. A written report is required.

509. Design Project. 3 to 6 credits. Prerequisite: Restricted to the Master of Engineering student candidate and subject to approval by the student’s advisor. A three to six credit course of engineering design experience involving individual effort and a formal written report. SUU grading only.

996. Thesis. 4-6 credits.

411. Communications Engineering. 3 credits.

423. Power Systems I. 3 credits.

426. Robotics Fundamentals. 3 credits.

430. Radiating Systems. 3 credits.

434. Microwave Engineering. 3 credits.

451. Computer Hardware Organization. 3 credits.

456. Digital Image Processing. 3 credits.

Elementary Education

(See Education: Elementary Education)

Engineering

Michael Mann (Graduate Director)

Program Description

The Doctor of Philosophy in Engineering program provides a student with specialized training customized to meet his or her specific interests and needs. The program is based upon the research strengths of faculty, and includes studies in the major engineering disciplines of chemical, civil, electrical, energy, environmental, geological, and mechanical engineering. The program includes a significant research component through substantial interaction and the mutual interest of the student and research advisor. Students work with their faculty advisors and advisory committees to develop a program of study that includes coursework related to and in support of their research. Students will also expand their knowledge base through the multidisciplinary component of the program. The program allows students to take a portion of their coursework to support and expand their background in areas outside the School of Engineering and Mines.

The only required course for this program is Engineering Seminar, which is designed to facilitate interaction between the students in the program and the faculty of the various engineering programs. All other coursework is selected by the student and her/his advisory committee and is tailored to match the specific needs of the student.

Specific research interests of the faculty can be found through the School of Engineering and Mines web page (www.und.nodak.edu/dept/eng) or by consulting the director of the engineering doctoral program.

Admission Requirements

In addition to the Admission requirements of the Graduate School the following requirements must be met:

1. A master’s degree in an engineering discipline or
2. A baccalaureate degree from an ABET accredited engineering program or
3. A student holding a non-engineering baccalaureate degree will be required to complete a Master of Science degree in one of the engineering degree programs in the School of Engineering and Mines at the University of North Dakota.
4. Under special circumstances, an international student holding a master’s degree in an engineering discipline may be admitted directly into the doctoral program. This determination will be made by the Engineering Graduate Program Committee (EGPC) and approved by the Graduate School.
Degree Requirements

The following requirements are in addition to the general requirements for the Doctor of Philosophy degree as prescribed by the Graduate School.

1. Scholarly Tools: Proficiency in mathematics demonstrated by completing nine approved credits (400 level or higher) with a grade of B or better which must include at least one course in numerical analysis.
2. A maximum of 30 credits transferred from the master’s program.
3. A minimum of 30 credits for doctoral research and dissertation.
4. A minimum of 30 credits taken at UND after completion of the M.S. program and after formal admission to the Ph.D. program. The coursework will include the following:
   a. Engr 562. Engineering Seminar (3 credits)
   b. Research Support: A minimum of 15 credit hours of graduate coursework (500-level) from within the five engineering disciplines of the School of Engineering and Mines as recommended by the student’s advisory committee in support of his/her research topic.
   c. Multidisciplinary emphasis: A minimum of 12 credit hours (300-, 400- or 500-level) taken from any department within the University and agreed upon between the student and her/his advisory committee
5. A written comprehensive examination completed when at least 21 credits of doctoral coursework have been completed or after completing 51 credits of coursework past the baccalaureate degree before being advanced to candidacy. This examination will be based significantly on the content of the individual’s program of study, but may also contain general questions relating to engineering fundamentals. The examination will be administered by a group of faculty from one of the SEM’s academic departments which best represents the student’s core program of study.
   The comprehensive examination will be administered after the second year of graduate work, but before the end of the fifth semester of a student’s enrollment in the program. Based on the results of the examination, the EGPC may establish stipulations to continue in the program. These stipulations may include completing additional courses to cover deficiencies or recommending completing a master’s degree. If a student fails the exam, the student will be allowed one opportunity to repeat the examination after completing the EGPC specified stipulations.
6. Each student must present to his or her advisory committee an annual oral progress report describing research progress. One of these presentations will include a detailed presentation of the dissertation research plan and will be attended by the Engineering doctoral program director. This presentation must be completed at least one year prior to the expected completion of the Ph.D. requirements.
7. A candidate for the degree must complete an original basic research investigation. Each candidate will complete the research investigation to the satisfaction of the research advisor and the advisory committee and will prepare a dissertation covering the research. The candidate will present and defend the dissertation at the final oral examination.

Residence Requirements

The purpose of residence is to provide an opportunity for sustained and concentrated intellectual effort, to provide for immersion in an academic research environment, and to permit extensive interaction with fellow students and faculty of the major department. Within the first two years of graduate work, at least two consecutive semesters must be completed in residence. During residency, a student must be registered for at least twelve credits in a semester, or be a graduate research or teaching assistant taking the appropriate credits to qualify as a full-time student. The remainder of the credits required for a degree can be completed in a manner to accommodate the student’s fiscal, family, job related, and other constraints. The program of study must be completed within the seven year period normally allowed for graduate programs.

Under special circumstances, the student in conjunction with his/her advisory committee may petition the dean of the graduate school for variances in this policy.

Courses

501. Energy, Resource and Policy. 3 Credits. Prerequisite: Consent of instructor. Structured discussions of energy, resources and policy issues, related to energy security and national and global well-being, based on selected readings.
502. Alternative Energy Systems. 3 Credits. Prerequisite: Consent of instructor. Provides an interdisciplinary background in alternative energy systems. Any form of energy production different from traditional fossil fuel combustion falls in this category. Such alternate systems include energy production from biomass, gasification of wood and coal, geothermal energy, solar energy (wind energy, fuel cells, and photovoltaics), etc.
562. Seminar in Engineering Research. 1 Credit. Prerequisites: admission to the Energy PhD program. Conference and reports on current developments in Engineering.
590. Special Topics in Engineering. 1 to 6 Credits. Prerequisites: consent of instructor. Investigations of special topics in energy engineering dictated by students and faculty interests.
599. Doctoral Research. 1 to 15 credits repeatable to 60.

English Language and Literature

Professors Anderegg, Beard (Graduate Director), Carson, Coleman, Dixon, Donaldson, Huang, Koprine, Marshall, McKenzie (Chair), J. Meek, M. Meek, O’Donnell, Rankin, J. Robison, L. Robison, Wiener and Wolfe

Program Description

The Department offers the degrees of Master of Arts and Doctor of Philosophy.

The University of North Dakota Department of English offers a varied program of studies in English and American literature, writing, and the English language. The academic atmosphere is intimate, class size for graduate courses is small, and students are encouraged to work closely with members of the graduate faculty. The curriculum varies from year to year and includes courses in genres, periods, specific authors, critical theory, rhetoric/composition, interdisciplinary study, creative writing, cinema/film theory, linguistics, and research methods. Faculty in the department also work in interdisciplinary areas such as American Studies, Peace Studies, Composition Studies, American Indian Studies, and Women Studies. The Department works closely with the University’s College of Education and Human Development in the area of English Education. In all areas of work, students are encouraged to utilize a variety of critical and theoretical approaches.

The Department sponsors an annual week-long writers’ conference that gives graduate students a chance to hear contemporary writers read their work and discuss the writing process. Visitors have been Czeslaw Milosz, Louise Erdrich, Larry McMurtry, Leslie Silko, James Welch, August Wilson, Luisa Valenzuela, Peter Matthiessen, Tim O’Brien and Ursula Hegi.

Admission Requirements

Applications for admission must be completed by March 1 for full consideration and Teaching Assistantships.
Master of Arts

1. Twenty semester credits of English beyond the communication requirement with a 3.00 grade point average or better.
2. Undergraduate work in at least one language other than English equivalent to the first two college-level years or by demonstrating (by Educational Testing Service or by Languages Department examination) a reading knowledge of one language other than English or the satisfactory completion of two semesters each of two languages other than English. In some cases, students may be admitted without the language requirement and may complete it as part of the M.A. program.
3. A writing sample of 10-15 pages on topics or in modes appropriate to the proposed program of study (submitted directly to the department). Applicants who plan to major in creative writing should also submit an analytical paper.
4. Graduate Record Examination General Test required. Literature in English Advanced Test is recommended.

Doctor of Philosophy

1. The requirements listed above for the Master of Arts.
2. Ordinarily a master’s degree of at least 30 semester credits of courses in literature and English language or in an acceptable combination of these and related subjects. (Graduate courses taken elsewhere may, at the discretion of the Department, be accepted in lieu of courses that would otherwise be required at the University of North Dakota.)

Financial Assistance

Financial aid available to graduate students includes Board of Higher Education tuition scholarships for North Dakota residents and Graduate Teaching Assistantships.

Degree Requirements

Master of Arts with Thesis

1. English 500; English 501 and 501L (for Graduate Teaching Assistants only); and either English 510 or 511. Courses must be completed with grades of A or B ($ for 501L).

Doctor of Philosophy

1. English 500; English 501 and 501L (for Graduate Teaching Assistants only); and either English 510 or 511. Courses must be completed with grades of A or B ($ for 501L).
2. Up to ten credits in addition to the four credits allowed for the M.A. may be in Readings and Research courses (English 590, 591, and 593).
3. Evidence of the mastery of scholarly tools appropriate to the proposed field of studies is required, including proficiency in one language other than English plus either another language or languages.
4. Completion of the scholarly tools and the comprehensive examinations, in areas or topics relevant to a student’s individual interests as recommended by the student’s Advisory Committee. These topics and areas will normally include a combination of at least four of the following: departmentally approved historical periods or movements; authors outside these periods or movements; critical, scholarly-critical investigation of a single topic, a creative work or group of works, or a number of related, publishable essays (critical, scholarly, bibliographical, methodological, pedagogical) which may be developed in combination with a project or projects deemed appropriate and acceptable by the student’s Advisory Committee.

5. Fifteen (15) hours of credit may be granted for the dissertation, which may take the form of either a closely focused scholarly-critical investigation of a single topic, a creative work or group of works, or a number of related, publishable essays (critical, scholarly, bibliographical, methodological, pedagogical) which may be developed in combination with a project or projects deemed appropriate and acceptable by the student’s Advisory Committee.

NOTE: Students may be recommended for advancement to candidacy for the doctoral degree only after they have satisfied the following requirements in addition to those required by the Graduate School: Completion of English 500 and either English 510 or 511 with grades of A or B; for Graduate Teaching Assistants, English 501 with a grade of A or B and 501L with a grade of S.

Courses

500. Introduction to Graduate Studies. 2 credits. Required of all candidates for advanced degrees in English. An introduction to graduate study and the profession.
501L. Teaching College English Lab. 1 credit. The practicum part of English 501. Required of Graduate Teaching Assistants in English.
510. History of Literary Criticism. 3 credits. A history of European criticism from the Classical Greek period to the present day, with emphasis on major texts.
511. Problems in Literary Criticism. 3 credits. A course in applied criticism. Repeatable when topics vary.
515. Creative Writing. 3 credits. Prerequisite: English 411 or 412 or permission of the instructor. Creative writing of fiction and poetry. This course allows students to receive graduate-level instruction in a workshop setting, meeting regularly with other students, sharing their work and critiquing one another’s work. The purpose of this course is to enable the student to produce fiction and poetry of professional quality. Repeatable once by M.A. candidates, three times by Ph.D. candidates.
520. Studies in English Literature. 1 to 3 credits. The subject of study will vary from semester to semester, and the course may be repeated for credit when the subject of study differs.
521. Studies in American Literature. 1 to 3 credits. The subject of study will vary from semester to semester, and the course may be repeated for credit when the subject of study differs.
522. Studies in English Language. 1 to 3 credits. The subject of study will vary from semester to semester, and the course may be repeated for credit when the subject of study differs.
531. Seminar in English Language. 3 credits. Prerequisite: English 500. This class requires the preparation and delivery of a long research paper on an appropriate topic. Repeatable.
532. Seminar in American Literature. 3 credits. Prerequisite: English 500. Similar in method to English 531. Repeatable.
533. Seminar in English Language. 3 credits. Prerequisite: English 500. Similar in method to English 531. Repeatable.
590. Readings. 1 to 4 credits.
591. Readings. 1 to 4 credits.
593. Research. 1 to 4 credits.
Environmental Engineering

Professors Beaver, Gerla, Ghassemi, Gullicks, Korom, Mann, Moretti, Muggli and Seames (Graduate Director)

Program Description

The Environmental Engineering graduate program combines those aspects of Chemical, Civil, and Geological Engineering most applicable to environmentally related problems. This program is, to our best knowledge, unique in the combination of these three disciplines for the training of graduate students in environmental engineering. These interdisciplinary M.S., M.Eng., and Certificate programs provide high-quality education and skill development opportunities, to prepare students to be personally and professionally successful, to be life-long learners, and to be knowledgeable, contributing members of a multicultural, global society. The faculty of the three participating departments and participating UND Energy and Environmental Research Center (EERC) personnel represent a tremendous wealth of environmental expertise based on past and current field and laboratory research, consulting experience, professional organization involvement, and formal continuing education and technical training. The program committee members named above have strong working relationships with personnel from a wide variety of industries, municipalities, consulting firms, governmental agencies, and research-funding organizations. These relationships will provide many opportunities for collaboration and research, which will be beneficial to all stakeholders of the programs.

The program is oriented primarily towards a Master of Science (M.S.) degree. A research project, culminating in a master’s thesis is a major part of this program. The program emphasizes a multidisciplinary approach to Environmental Engineering from Chemical, Civil, and Geological perspectives and includes the three major environmental areas relating to the mitigation of environmental impacts from gaseous, liquid, and solid-phase emission sources. Students benefit from the interactions between the proposed programs and the EERC. The EPA-certified laboratories, pilot processes, research specialties, and ongoing research opportunities at the EERC are phenomenal assets. In addition, a number of on-campus laboratory facilities, including the multi-disciplinary Water Quality Research Laboratory (Leonard Hall), Civil Engineering Environmental and Hydraulics Laboratories, and Chemical Engineering Laboratories are well equipped and fully available to the proposed programs. Enhanced research opportunities and additional analytical laboratory expertise will be available through established off-campus relationships with entities such as the ND Department of Health; the ND State Water Commission; the Grand Forks Water Treatment Plant; the Grand Forks Wastewater Treatment Facility; the Grand Forks Trail Rural Water Users, Inc.; Simplot, Inc.; Advanced Engineering and Environmental Services, Inc.; CPS, Ltd.; EAPC Architects Engineers; Webster, Foster, Weston, Inc.; KBM, Inc.; the City of Devils Lake; and numerous small communities.

A Masters of Engineering degree is also available. For this degree, a design-oriented project is completed in lieu of the Masters Thesis. Special certificate programs are also offered in various concentrations and will consist of a group of three courses. The availability of a concentration will be published on the program web site, together with the schedule of courses offered, and the manner of delivery.

Admission Requirements

Master of Science

a) Bachelor of Science degree in an ABET accredited engineering program in Environmental, Chemical, Civil, or Geological Engineering.

b) Students holding a B.S. degree in other engineering disciplines or in a science field may be admitted to Qualified Status with an obligation to acquire background undergraduate engineering knowledge. The exact requirements will be determined on a case-by-case basis.

c) An overall undergraduate GPA of at least 2.75, or 3.00 for the last two years

d) Graduate Record Examination General Test for applicants from non-ABET accredited programs.

Master of Engineering

a) Bachelor of Science degree in an ABET accredited engineering program in Environmental, Chemical, Civil, or Geological Engineering.

b) Students holding a B.S. degree in other engineering disciplines or in a science field may be admitted to Qualified Status with an obligation to acquire background undergraduate engineering knowledge. The exact requirements will be determined on a case-by-case basis.

c) An overall undergraduate GPA of at least 2.50, or 3.00 for the last two years

d) Graduate Record Examination General Test for applicants from non-ABET accredited programs.

Certificate

a) Bachelor of Science degree in an ABET accredited engineering program in Environmental, Chemical, Civil, or Geological Engineering.

b) Students holding a B.S. degree in other engineering disciplines or in a science field may be admitted to Qualified Status with an obligation to acquire background undergraduate engineering knowledge. The exact requirements will be determined on a case-by-case basis.

c) Graduate Record Examination General Test for applicants from non-ABET accredited programs.

Degree Requirements

Master of Science

In addition to the standard course requirements for a Master of Science Degree, the course of study of each student must include:

a) The following courses are required for all students:
   EnvE 562: Seminar in Environmental Engineering, 2 credits
   EnvE 591: Research in Environmental Engineering, variable credit

b) A minimum of three (3) credit hours must be taken from one of the following three Chemical Engineering courses:
   ChE 501, ChE 504, or ChE 512

c) A minimum of three (3) credit hours must be taken from one of the following three Civil Engineering courses:
   CE 531, CE 532, or CE 535.

d) A minimum of three (3) credit hours must be taken from one of the following Geological Engineering courses: GeoE 417, Geol 540
e) A thesis documenting research conducted on a problem(s) related to Environmental Engineering is required.

f) Additional required coursework may be taken from approved engineering or physical science courses.

**Master of Engineering**

A total of 30 credits is required with at least 15 credits at the 500 level, and 15 credits in approved design courses. Additional requirements include:

a) The following courses are required for all students:

   - EnvE 562: Seminar in Environmental Engineering. 2 credit
   - EnvE 595: Design project. 3 - 6 credits

b) A minimum of three (3) credit hours must be taken from one of the following three Chemical Engineering courses:

   - ChE 501, ChE 504, or ChE 512.

c) A minimum of three (3) credit hours must be taken from one of the following three Civil Engineering courses: CE 531, CE 532, or CE 535.

d) A minimum of three (3) credit hours must be taken from one of the following Geological Engineering courses: GeoE 417, GeoE 540.

e) Additional required coursework may be taken from approved engineering or physical science courses.

**Certificate**

a) A minimum of six (6) credit hours must be completed in Graduate level courses listed as EnvE, ChE, CE, GeoE, or GeoE, and identified as qualified courses in the concentration area for which certification will be issued.

b) An additional three (3) credit hours must be completed in engineering or physical science courses identified as qualified courses in the concentration area for which certification will be issued. Courses shall only count as credit toward fulfilling the requirements listed above when a grade of C or greater has been awarded at the completion of the course.

**Courses**

EnvE 562: Seminar in Environmental Engineering. Conferences, seminars, and reports on current developments in environmental engineering. Students will participate in professional presentations on topics relevant to environmental engineering. Students will also report the results of their graduate research or present information on other technically relevant topics approved by the course instructor.

EnvE 590: Special Topics in Environmental Engineering. Topics of current interest.

EnvE 591: Research in Environmental Engineering. Supervised research work in environmental engineering.

EnvE 595: Design project. 3 - 6 credits. Engineering design experience involving individual effort and formal written report and presentation.

The following are approved engineering courses and details for these courses may be found in the respective department section:

- ChE 501: Advanced Transport Phenomena
- ChE 504: Air Pollution Control
- ChE 507: Advanced Unit Operations
- ChE 509: Advanced Thermodynamics
- ChE 510: Advanced Chemical Process Control
- ChE 511: Advanced Chemical Engineering Kinetics
- ChE 512: Advanced Separation Processes
- ChE 515: Design of Experiments
- CE 531: Environmental Engineering III
- CE 532: Environmental Engineering IV
- CE 533: Industrial Wastes
- CE 555: Hazardous Waste Management
- Geol 500: Sedimentary Geology
- Geol 505: Isotope Geology
- Geol 509: Advanced Mineralogy
- Geol 525: Weathering and Soils
- Geol 530: Advanced Hydrogeology
- Geol 531: Hydrogeochemistry
- Geol 532: Contaminant Hydrogeology
- Geol 540: Water Sampling & Analysis

Refer to the Environmental Engineering Graduate Program list for other acceptable graduate and undergraduate courses.

**Program Description**

The Geography Department graduate program includes both thesis and non-thesis options leading to the M.A. and M.S. degrees. The principal areas of concentration are community and urban development, environmental geography, geographic education, and geographic techniques (cartography, GIS, and remote sensing of the environment). The graduate program provides an opportunity for close student-faculty interaction, easy access to current computer technology and field equipment, a broad liberal arts academic setting, and an abundant number of research topics within the Great Plains and Prairie Provinces.

The community and urban development track emphasizes the background education students need to enter careers in local economic development, land use planning, federal government service, historic preservation, and travel and tourism as well as being a stepping stone to pursue a doctoral degree in human geography elsewhere. The students in the M.A. option take a career-oriented selection of courses in population, economic, social, urban, cultural, historical, and regional geography. Students are encouraged to take cognate work in business and public administration, international relations, anthropology and archaeology, sociology, languages, and other fields appropriate to each student’s long-range plans.

The graduate program in environmental geography reflects a geographic focus on land use, climatology, water resources, human impact, biogeography and landscape ecology. Students follow a sequence of required and elective courses which reflects an environmental emphasis. The program is designed to prepare students for doctoral study or for a professional career in government, industry, or education in a wide variety of environmentally related fields. Students must pursue a cognate/minor in biology, geology, atmospheric sciences, and other related fields. In addition, the department offers an array of courses in geographic information technologies, allowing students to build expertise in GIS, remote sensing, cartography, and spatial analysis.

More complete information regarding faculty, laboratory facilities, recent publications and paper presentations, coursework, and entry level graduate placement can be obtained from our web page at: http://www.umd.edu/dept/geog.

**Admission Requirements**

1. A GPA of at least 3.00 in all undergraduate work.
2. A minimum of 18 semester credits of undergraduate work in geography with at least one course in each of the following fields: physical, human, regional, and techniques.
3. Six (6) credits in fields cognate to geography.

Outstanding applicants are evaluated on an individual basis and those with limited backgrounds in geography but a distinguished record in another discipline may be accepted on a qualified basis with the understanding that deficiencies will be met by the end of the second registration.

**Degree Requirements**

1. Two required courses, Geog 501 and Geog 578.
2. One required seminar, Geog 541.
3. A minor or cognate area of study, and a graduate program of study that reflects the student’s focus on physical (M.S.) or human (M.A.) topics.

**Thesis**

1. A minimum of 30 semester credits, including 9 semester credits for approved minor or cognate courses.
Non-thesis

1. A minimum of 36 semester credits, including 9 semester credits for approved minor or cognate courses.
2. A minimum of 16 credits that focus upon geographic skills and techniques which include quantitative methods, computer graphics and mapping, geographic information systems, remote sensing, field methods, library research and cartography. The non-thesis programs emphasize development of geographic skills that can be applied to specific problems and projects that may or may not involve research.

The Geography department also offers a graduate certificate in Geographic Information Science (GISc). GISc is the foundation of Geographic Information Systems (GIS), which integrate spatial data sets in the form of digital maps, digital aerial photos, remotely sensed imagery, and a geographic positioning system (GPS) coordinates. The goal of GISc is to model landscapes digitally and to enable the mathematical characterization of spatial and temporal processes.

Certificate students must be admitted to UND as either full- or part-time graduate students. Application for admission must be made to the UND Graduate School. The certificate is designed to serve: a) non-graduate students currently pursuing a graduate degree from UND, and b) non-degree-seeking professionals already holding a graduate and/or baccalaureate degree who seek to “re-tool.”

Admission Requirements

1. A baccalaureate degree from an accredited university.
2. A GPA of at least 2.75 in all undergraduate work.
3. Successful completion of the 12-credit GISc Certificate requires the following:
   1. Completion of the nine credits of core courses (see below).
   2. Completion of at least three credit hours of recommended courses (see below).
   3. A “B” grade or better in all core and elective courses.
   4. Completion time of no more than five years.

Required Core Courses:

- Geog 471/L Cartography and Computer Assisted Mapping (3 credits)
- Geog 474 Introduction to GIS (3 credits)
- Geog 574 Advanced Techniques in GIS (3 credits)

Elective Courses (at least 3 credits from):

- Geog 377/L Quantitative Applications in Geography (3 credits)
- Geog 475 Digital Image Processing (3 credits)
- Geog 575 Seminar in Remote Sensing (3 credits)
- Geog 591 Directed Studies in Geographical Problems (1-4 credits)

Courses

591. Geographic Thought Through Time. 2 credits. Required of all graduate students. A scholarly examination of the scope and content of geography from its inception to the present.

521. Advanced Physical Geography. 3 credits. Prerequisite: consent of instructor. An investigation of an advanced topic in physical geography. May be repeated if a different topic is examined.

537. Graduate Co-operative Education. 1-3 credits. Prerequisites: MSMA students must have minimum of 12 graduate credits, permission of department chair or co-op coordinator. (Only students in the MSMA non-thesis option are eligible). Practical experience of applying advanced concepts of geography. Experience will vary from student to student and must be coordinated with co-op host.

541. Seminar in Geography. 3 credits. Prerequisites: Geography 578 and graduate standing in geography. A seminar that includes discussions of selected readings, student reports, and student research projects leading to oral and written presentations.

551. Advanced Human Geography. 3 credits. Prerequisite: consent of instructor. An investigation of an advanced topic in human geography. May be repeated if a different topic is examined.

560. Seminar in Regional Geography. 3 credits.

574. Advanced Techniques in Geographic Information Systems. 3 credits. Prerequisites: Geography 474 or equivalent. An advanced course designed to extend GIS knowledge and experience and to prepare students to become effective GIS analysts. The course follows a hands-on, problem-solving approach that integrates the interests and analytical needs to participating students.

575. Seminar in Remote Sensing. 3 credits. Prerequisite: Geography 475 or consent of instructor. A seminar in the analysis of remote sensing techniques as applied to contemporary research problems in geography.

576. Field Methods and Analysis in Geography. 3 credits. An advanced, intensive approach to the measuring and mapping of cultural and physical features of the earth in the field. Familiarization with the practical problems involved in data collection techniques in rural as well as urban areas and transfer of the pattern of phenomena of an area to a scale suitable for mapping.

578. Geographic Research and Writing. 2 credits. Prerequisite: Graduate standing. Required of all graduate students during the first semester in which they are registered and in residence or the first semester offered. Orientation to methods of research and communication in geography. Emphasis upon research design, identification of bibliographic and geographic source materials, communication skills, and proposal writing.

591. Directed Study in Geographical Problems. 1 to 4 credits.


334. Climatology. 4 credits.

377. Quantitative Applications in Geography. 2 credits.

377L. Spatial Analysis Laboratory. 1 credit.

422. Selected Topics in Physical Geography. 3 credits.

425. Selected Topics in Economic Geography. 3 credits.

453. Historical Geography. 3 credits.

455. Political Geography. 3 credits.

457. Urban Geography and Planning. 3 credits.

462. Geography of North America I. 3 credits.

463. Regional Geography. 2 to 3 credits.


471L. Computer Mapping Laboratory. 1 credit.

474. Introduction to Geographic Information Systems. 3 credits.

475. Digital Image Processing. 3 credits.

Geology

Professors Beaver, Forsman, Gerla (Graduate Director), Ghassemi, Gosnold, Groenewold, Hartman, Josephs, Korom, LeFever (Chair), Matheney and Perkins

Program Description

The Department of Geology and Geological Engineering offers programs of study leading to the degrees Master of Arts, Master of Science, and Doctor of Philosophy. Research emphasis is currently in the following areas: 1) hydrogeology, environmental geology, and geological engineering; 2) economic geology of petroleum, coal, and mineral resources; 3) sedimentology, stratigraphy, and paleontology; 4) geomorphology and glacial geology; 5) petrology and geochemistry; 6) geophysics and tectonics; and 7) interdisciplinary geological projects involving several research areas including integrated basin analysis, surface mining and reclamation, and underground coal gasification. For more detailed information, please visit our web site at: http://www.geology.und.edu.

Admission Requirements

1. At least 30 semester credit hours in the geological sciences with a GPA of at least 3.00 in the geological sciences.
2. Ten (10) upper division semester hours of geological sciences and the equivalent of physical geology, historical geology, and a geology field camp. Applicants have the option to fulfill these requirements by: 1) taking the appropriate undergraduate courses for credit; 2) demonstrating competency by taking appropriate advanced courses; or 3) demonstrating competency by written examinations in general or specific subject areas. Students with degrees in other areas of science or engineering may, upon approval of their advisory committee, use upper division credits in place of the geology requirement, but must complete the equivalent of physical geology, historical geology and geology field camp (the equivalent of approximately 14 semester credits).
3. One year minimum of chemistry and physics.
4. One semester of calculus (equivalent to Math 146 or Math 165 at UND) for the M.A. degree; two semesters of calculus (equivalent to Math 165 and 166 at UND), and at least three credits in statistics, computer programming, or advanced calculus (with an additional calculus course, linear algebra, differential equations, or advanced analysis/engineering math) for the M.S. and Ph.D. degrees. Deficiencies in the required undergraduate preparation in mathematics or the related sciences may be corrected by taking the required courses, without graduate credit, after beginning graduate work in provisional or qualified status.

5. Applicants are expected to score at the 50th percentile or better on the Graduate Record Examination General Test.

Initial decisions for admission and financial aid are made about March 1 for the fall semester and about September 1 for the spring semester.

Undergraduate students in the Geology, Geological Engineering, or Environmental Geology and Technology majors are eligible for early admission to the M.S. program on Qualified status, providing that they have:

1. Completed 95 semester credit hours of coursework.
2. Completed 30 semester hours of coursework and 8 hours of upper division coursework in the geoscientific sciences, including the equivalent of physical and historical geology.
3. Achieved a GPA of 3.0 or better in the geological sciences.

Advancement to Approved status will occur when the student has completed the graduation requirements for the bachelor’s program they are enrolled in, and when all deficiencies have been removed.

Undergraduate students admitted on Qualified status are eligible to take 500-level courses in their last two semesters prior to completing the bachelor’s degree requirements. Such courses could be included in the 30 credit hours for the degree and could appear in the program of study.

### Degree Requirements

Please see the Degree Requirements section of the Graduate catalog for the general requirements for the M.A., M.S., and Ph.D. degrees.

#### Master of Arts and Master of Science

The Department expects every graduate student to have breadth in geology. Before a student can be advanced to candidacy, he or she must demonstrate such breadth by completing at least six semester credits of coursework, at the graduate or undergraduate level, in each of the following subject areas:

- **a)** mineralogy, petrology, and geochemistry
- **b)** sedimentology, stratigraphy, and paleontology
- **c)** hydrogeology and geomorphology
- **d)** structural geology and geophysics

The time normally needed to complete the requirements for the masters degree in geology is about two years of full-time work. Students with graduate teaching or research assistantships may need more time.

Depending upon the total number of undergraduate hours in geology, the undergraduate training in related sciences, and the area of geology selected for graduate work, up to 12 hours of 300-400 level coursework in geology (and of courses listed in the Graduate section of the catalog) may be taken for graduate credit.

#### Doctor of Philosophy

Please see the Degree Requirements section for the general degree requirements. Students normally take the equivalent of three years of full-time work beyond the master’s degree for the doctorate.

1. In certain cases, a qualifying examination may be required before the end of the student’s first year in a doctoral program.
2. Demonstration of (1) proficiency in two foreign languages, or (2) proficiency in one foreign language and two scholarly tools courses, or (3) proficiency in four scholarly tools courses. (Scholarly tools courses typically are advanced undergraduate courses in related fields in mathematics, science, or engineering.)

### Courses

Most of the 500-level courses listed below are offered at least once every three semesters. Others are offered less frequently, on demand.

- **500. Sedimentary Geology** 1 to 4 credits. Prerequisite: Consent of instructor. A sequence of courses emphasizing: A. sedimentary processes and deposits; B. carbonate petrology; C. clastic petrology; and D. dating of depositional systems.
- **505. Isotope Geochemistry** 3 credits. Prerequisites: Geology 321, or permission of instructor. Geochemistry and cosmochemistry of radioactive and stable isotopes; isotope equilibrium; applications in paleoclimatology, environmental isotope geochemistry, igneous, metamorphic, and sedimentary petrology.
- **506. Glacial Geology** 4 credits. 3 hours lecture, 2 hours laboratory. Prerequisite: Geology 311. Origin, growth, and movement of glaciers; landforms and deposits incident to glaciation.
- **509. Advanced Mineralogy** 1 to 4 credits. Prerequisite: Geology 320. Geology 321 is also recommended. Advanced study of specific mineral groups or selected topics in mineralogy.
- **511. Advanced Structural Geology** 4 credits. Reading and research in special topics in structural geology and geotectonics.
- **512. Advanced Petrology** 1 to 4 credits. Prerequisite: Geology 320. Selected topics in petrology taught using conventional lecture and laboratory/field approach.
- **515. Advanced Paleontology** 3 to 6 credits. Prerequisites: Geology 415, Biology 101, or consent of instructor. A sequence of courses emphasizing A. Invertebrate paleontology; B. Evolution and the fossil record; C. Paleocology; D. Paleontological procedures; E. Micropaleontology.
- **518. Topics in Advanced Stratigraphy** 2 to 4 credits. Prerequisites: Geology 411, 415. Selected topics in lithostratigraphy and biostratigraphy.
- **520. Statistical Applications in Geology** 3 credits. Prerequisites: An introductory statistics course, such as CSE 153 or Psych 241, and consent of instructor. The application of statistical techniques to geologic data and problems, with emphasis on analysis of geologic sequences, map analysis, and multivariate analysis of geologic data.
- **522. History and Philosophy of Geology** 3 credits. Prerequisite: Permission of instructor. Historical and philosophical development of the science of geology.
- **523. Topics in Advanced Geomorphology** 1 to 4 credits. Prerequisite: Geology 311. Selected topics in geomorphic processes and landforms.
- **525. Weathering and Soils** 3 credits. Prerequisites: Geology 311 and 411 or consent of instructor. Properties and classification of soils, the factors and processes of weathering and soil formation.
- **530. Advanced Physical Hydrogeology** 3 credits. Prerequisite: Geology 412 or 427, Geol 265, or consent of instructor. Topics in groundwater movement, fracture flow, analytical/numerical modeling, and groundwater supply.
- **531. Hydrogeology** 3 credits. Prerequisite: Geology 321, Math 166, or permission of instructor. The origin, characteristics and modeling of surface and ground water geochemistry.
- **532. Contaminant Hydrogeology** 3 credits. Prerequisites: Geology 417, Geol 427, Math 265, or consent of instructor. Chemical and physical processes affecting contaminant behavior in groundwater with analytical/numerical modeling and case studies.
- **540. Water Sampling & Analysis** 3 credits. Prerequisite: Chemistry 121. Techniques of water and sediment sampling and analysis using equipment in the UND Water Quality Laboratory. Results are interpreted in the context of the natural systems from which the samples are taken. Enrollment is limited to eight students per section. A laboratory fee is required.
- **590. Research** 1 to 4 credits. Laboratory, field, or library research on problems of interest (may be repeated).
- **591. Directed Studies** 1 to 4 credits. Directed advanced research in a specialized field of geologic study (may be repeated).
- **311. Geomorphology** 4 credits.
- **320. Petrology** 3 credits.
- **321. Geochemistry** 3 credits.
- **322. Engineering Geology** 3 credits.
- **401. Geological Interpretation of Aerial Photographs** 3 credits.
- **405. Industrial Minerals** 3 credits.
- **406. Ore Deposits** 3 credits.
- **407. Petroleum Geology** 3 credits.
- **411. Sedimentology and Stratigraphy** 3 credits.
- **414. Geophysics** 3 credits.
- **415. Introduction to Paleontology** 4 credits.
- **417. Hydrogeology** 3 credits.
- **418. Hydrogeological Methods** 2 credits.
- **419. Groundwater Monitoring and Remediation** 3 credits.
History
Professors Berger, Burin, Clingan, Ellis, Ettling, Handy-Marchello, Iseninger (Graduate Director), Kelsch, Mochoruk (Chair), Porter and Reese

Program Description
The department of History offers programs leading to the Master of Arts degree, the Doctor of Arts degree, and the Ph.D. The M.Ed. degree is also available for students who wish to complete an education degree with an area of concentration in History. See the M.Ed. requirements in the Degree Requirements section for further information. The program advisor for the M.Ed. will be in the Department of History, but students planning to take this option should also consult an advisor in the College of Education and Human Development.

Some Teaching Assistantships, providing stipends and waivers of tuition, are available. Applications for assistantships should be submitted by March 1, but later applications will be considered.

Master of Arts

Admission Requirements
1. Undergraduate preparation of a minimum of 20 semester credits in history with at least six credits in the upper division level.
2. An overall undergraduate GPA of at least 3.00 and at least 3.25 in all undergraduate history courses.
3. A writing sample of 8-10 pages, preferably a research or seminar paper (submitted directly to the department’s Director of Graduate Study).

Degree Requirements
1. A total of 30 credits including 21 in either United States or European history and 9 credits in: a) a field of history not included in the primary concentration, such as United States or European History, or b) a minor in a related discipline such as Communications, English, Geography, or Sociology, or c) a cognate as defined in the Degree Requirement section of this catalog.
2. Research seminars, either 511 or 515.
3. At least one readings course, either 593 or 594.
4. History 502, Historiography, counted as three credits in the major concentration.
5. Six credits of thesis.

Doctor of Arts

This degree is designed to prepare those whose primary interest is teaching history at the undergraduate collegiate level. It places heavy emphasis upon subject matter and a supervised teaching internship. The internship requires teaching a survey course for one semester during the second year of the program and a second course for one semester at the 200 or 300 level during the third year. The department offers five fields of study: Ancient World, Early Modern Europe, Modern Europe, United States to 1877, and United States since 1877.

The Doctor of Arts program has been designated a Western Regional Graduate Program by the Western Interstate Commission on Higher Education (WICHE) because of its uniqueness and strength. It is, therefore, open to residents of the thirteen western states at resident tuition rates.

Admission Requirements
1. All M.A. admission requirements.
2. A master’s degree, preferably in history and with thesis, but at least 15 semester credits of history at the graduate level.
3. A GPA of at least 3.50 for the master’s level work.
4. General and advanced (history) tests of the Graduate Record Examination are optional, but strongly suggested for those whose previous academic record makes their admission questionable or those who have been out of school for several years. High GRE scores may indicate sufficient promise to permit admission of applicants with inadequate grade point averages or insufficient courses. The department may require the GRE as a condition of admission if preliminary examination of the student’s application indicates that the score would be helpful in determining ability to do graduate level work.

It is recommended that applicants have at least two years of teaching experience in history, the social sciences, or the humanities.

Degree Requirements
1. History 502, 511 or 515, 551, 595, and 599.
2. One three-credit course taken outside of the department, preferably Psychology 501, Psychological Foundations of Education (other courses acceptable with departmental approval).
3. A teaching internship of eight credits.
4. A cognate of a minimum of 12 credits from such areas as the social and behavioral sciences or the humanities.
5. A 20-credit-hour area of concentration from one of the fields listed above which includes a 5-credit independent research project representing a sustained creative effort exploring a significant topic of concern to historians and teachers of history.
6. Written examinations in both United States fields and in two of the three European fields selected on the basis of work done in a Master’s degree program as well as the doctoral program. (Exams may be taken after 72 hours of the program of study have been completed.)
7. Before receiving their degrees, all students will have taught both Western Civilization survey courses (History 101 and History 102) and both United States History survey courses (History 103 and History 104) or their equivalents. This requirement may be satisfied by teaching as a Teaching Assistant in the department or by teaching in the internship or, if approved by the department, by having previous teaching experience.

Students in both D.A. and M.A. programs should consider taking the Public History courses, 480 and 481, and some work in records management; or geography, including cartography; or journalism; to increase employment opportunities.

Joint Ph.D. Program with NDSU

Admission Requirements
1. Preference for admission into the Ph.D. program with full graduate standing will be given to applicants who have a GPA of at least 3.5 in history courses in an earned bachelor’s or master’s degree.
2. Applicants will submit a statement of intent clearly outlining the applicant’s research interests, career goals, and purpose for seeking a Ph.D. in history.
3. Applicants will submit a substantial paper previously submitted for a class in history to provide evidence of ability to research thoroughly, to interpret and analyze primary
and secondary sources, to synthesize information, to organize thoughts logically, and to communicate clearly and effectively.

4. Preference for admission into the Ph.D. program with full graduate standing will be given to applicants who score a combined total of 1,000 points on the verbal and analytical sections of the GRE aptitude test.

5. The program requires students for whom English is a second language to have a minimum TOEFL score of 600.

6. Students seeking admission for the fall semester must submit a complete application by February 10. Students seeking admission for the spring semester must submit their complete application by September 15.

**Major Fields**
- Great Plains History
- Rural History
- North American History
- Western European History
- Minor Fields: Public History, World History

**Degree Requirements**
1. Students must satisfactorily complete 90 credits beyond the bachelor’s degree. Students entering with an M.A. degree must complete at least 60 additional semester graduate credits. Core course requirements must be met which include Methods of Historical Research, Historiography, Seminar in the Teaching of History, at least two research seminars, and at least two readings courses. Students must complete 36 course credits with at least 27 credits in history courses. Students will earn 12 credits in two or more major fields. Students may choose a third major field or a minor field (nine semester credits).

2. Students must have a proficiency in two languages other than their native language, or one foreign language and one special research skill such as statistics or computer science.

3. The program will require at least one academic year in residence at either campus. Each student will register at one of the universities that will be the student’s academic “home.” The student’s adviser must be employed in the home university. At least one member of the student’s committee must be employed at the other (not home) university. Students may have to take courses at both universities.

4. Students will write three comprehensive examinations in their major and minor fields. The exams will be read and graded by the supervisory committee. Students will complete an oral examination based on the written exams. The oral examination is to be conducted by the supervisory committee.

5. Students will write a dissertation (up to 24 credits) on an approved topic in consultation with the faculty adviser and the supervisory committee of five faculty. The dissertation must be based on extensive research in primary and secondary sources, must argue an original thesis, and must be defended before the supervisory committee.

6. The committee will be composed of the faculty adviser who represents the student’s field of study and who will direct the research and writing of the dissertation. A second member of the committee (second reader) represents the student’s major field of study. A third member of the committee will represent the student’s minor field of study. The fourth member of the committee represents either the student’s major field or minor field. At least one of the four history faculty must be from the cooperating (non-home) university. The Graduate School will appoint the fifth member of the committee.

**Residency Requirements**
Students enrolled in the Ph.D. program are required to complete at least one academic year (18 credits minimum) in residence at one campus. Resident students may qualify for teaching assistantships. Students who have completed a M.A. degree may be assigned full responsibility for undergraduate courses or may be assigned to assist a faculty member in teaching courses.

Students will be required to take some courses from faculty at both campuses, but will register at only one university. Some courses will be offered by interactive video network, some will be offered through internet on-line systems, some courses will require students to travel to the other campus.

Students not residing on one of the cooperating campuses will have to have access to a satisfactory research library for various courses and for dissertation research.

**Assistantships**
Students may apply for assistantships (based on availability) at the campus of their residency during their period of residency. Students will be limited to three years (six semesters of assistantships).

**Libraries**
The combined UND/NDSU libraries contain over two million volumes. In addition, each university library houses an archive of historic materials which have supported the research of many faculty members and visiting scholars.

The catalogs of the Chester Fritz Library and the Elwyn B. Robinson Department of Special Collections at the University of North Dakota are available online.

The catalog of the Libraries at North Dakota State University are available on line along with the catalog of the Institute for Regional Studies.

The North Dakota State University Library also houses the Germans From Russia Heritage Collection.

**Locations**
The University of North Dakota is in Grand Forks and North Dakota State University is in Fargo. Both cities are situated along Interstate 29 about 75 miles apart.

**Courses**
- **502. Historiography.** 3 credits. Required for all candidates for advanced degrees in history. An introduction to the history of historical thought, from the classical Greeks to the present, with examination of some of the works of important historians writing in the western tradition. The first half of the course is primarily devoted to classical and European historians; the second half is primarily devoted to modern and American historians.
- **511. Research Seminar in American History.** 3 credits. Required for all candidates for the Doctor of Philosophy. Seminar in the Teaching of History. The subject of the research seminar is determined by the student and the faculty adviser. Students are responsible for preparing and presenting research papers, utilizing methods appropriate to college-level teaching. Course may be repeated.
- **515. Research Seminar in European History.** 3 credits. Required for all candidates for the Doctor of Philosophy. Seminar in the Teaching of History. The subject of the research seminar is determined by the student and the faculty adviser. Students are responsible for preparing and presenting research papers, utilizing methods appropriate to college-level teaching. Course may be repeated.
- **551. Seminar in the Teaching of History.** 1 to 4 credits. Required of all students pursuing the Doctor of Philosophy and Doctor of Arts. Includes methods appropriate to college-level teaching. Class consists of discussion, demonstration, and practice. S/U grading only.
- **555. Directed Readings.** 3 credits. Prerequisites: Graduate Status. Independent, directed readings on a topic tailored to the individual needs of the student. (No more than 3 hours of HIST 555 can count as credit towards a Doctoral Program without the approval of the Chair, the Graduate Director, and the Adviser.)
Industrial Technology

Professor Diez (Graduate Director), Holten, Huang and Kenney

Program Description

The Department of Industrial Technology offers two program options leading to the Master of Science. The program for the degree is designed on an individual basis to serve students who desire to go on to college, technical institute, or secondary level teaching, administration, or to technical/managerial careers in business and industry.

Admission Requirements

1. Bachelor’s degree from an accredited university or college.
2. An overall GPA of 2.75 (A=4.0) or GPA of at least 3.0 for the last two years of undergraduate study.
3. A minimum of 20 semester hours of undergraduate coursework in technology education or industrial technology or related field of study.

An applicant who fails to meet these admission requirements may be admitted under provisional status. Students who do not meet requirement #3 will be required to satisfactorily complete undergraduate courses to make up their deficiency before advancement to approved status.

Degree Requirements

Master of Science

A. Thesis Option:

A minimum of 30 semester credits including 9 semester credits for approved minor or cognate courses.

Credits
1. EFR 515 or EFR 516 Statistics I, II.........................3
2. IT 525 Research in Industrial Technology..................2
3. IT 550 Industrial Technology Management..................3
4. IT 998 Thesis .........................................................4

B. Non-Thesis Option:

A minimum of 32 semester credits including 9 semester credits for approved minor or cognate courses.

Credits
1. EFR 515 Statistics I..................................................3
2. IT 525 Research in Industrial Technology..................2
3. IT 550 Industrial Technology Management..................3
4. IT 997 Independent Study .........................................2

C. Optional courses for Thesis or non-Thesis Programs

535 Trends & Issues in Industrial Tech ..........................3
537 Graduate Cooperative Education............................1-3
540 Supervision and Industrial Training........................3
545 Seminar in Industrial Technology..........................1-3
560 Quality Planning and Analysis...............................3
565 Product Safety and Liability .................................3
590 Special Topics......................................................1-4
593 Technical Problems in Industrial Technology............1-3
996 Continuing Enrollment .......................................1-12

D. General:

1. At least half of the credits in the student’s Program of Study must be at or above the 500 level.
2. Degree requirements identified by the Graduate School must be met.
3. The approved Program of Study must be completed.

Courses

525. Research in Industrial Technology 2 credits. Principles of methods and evaluation of research in industrial technology. Individual exploration of possible research topics for thesis.
535. Trends and Issues in Industrial Technology 3 credits. A comprehensive investigation and analysis of the trends, issues, and influences that challenge the profession of industrial technology in a changing technology-dominated society.
537. Graduate Cooperative Education 1 to 3 credits. A relevant field experience in government, industry, or business. Students must have their internships approved by the department.
540. Supervision and Industrial Training 3 credits. Study and investigation of principles and techniques involved in supervision and technical training for industry and education. The application of supervisory techniques with emphasis on the analysis of industrial operations and the design, implementation, and evaluation of training programs through total quality management.
545. Seminar in Industrial Technology 1 to 3 credits. Investigation and presentation of topical courses related to industry, technology, education, and industrial training. Repeatable to three credits.
550. Industrial Technology Management 3 credits. Expectations of managerial responsibilities of the typical industrial technology career. Strategic and systems approaches to product and process technologies. The role of changing technology in manufacturing function.
Instructional Design and Technology
Bopry, Grabe and Lemon (Graduate Director)

Program Description
The Instructional Design and Technology (IDT) program is a collaboration between the College of Education and Human Development, the College of Arts and Sciences, and the John D. Odgaard School of Aerospace Sciences. The designers believe the program benefits from the expertise of a diverse faculty, the various resources of the different organizational units, and a collaborative decision-making structure among the three units. The IDT program is administered through the College of Education and Human Development (CEHD) and follows the IDT, CEHD, UND, UND Graduate School, and NDUS rules and policies.

Program Mission
The primary mission is to prepare program graduates for service in education, business, government, and industry who will enhance instruction and learning through the use of technology. These graduates will be able to design, develop, implement, and evaluate technology-based instruction that is effective and that reflects sound principles of teaching and learning.

Minimum Admission Requirements
The IDT program follows the regular Graduate School requirement of an overall undergraduate grade point average of 2.75 or a junior/senior year grade point average of 3.00. The grade point average requirement for graduate work is a 3.5 or better. Provisional admission to the IDT program may be considered for students whose academic performance does not meet these criteria. Whether such consideration is given will depend on the circumstances and the judgment of the admissions faculty.

The applicant must have completed a baccalaureate degree in a field of study in the area or discipline appropriate to the field in which he or she intends to work. The applicant must have a basic knowledge of the microcomputer and substantial skill in using standard applications to produce work products (word processing, database, spreadsheet, drawing/painting, graphing, and other common applications).

Degree Requirements
The IDT master’s degree programs offer three options: the M.Ed., the M.S. (independent study option), and the M.S. (thesis option). The programs are all targeted at 35 credits. These 35 credit hours consist of 11 hours of core coursework in instructional design and technology, 3 to 6 hours of foundations coursework in education and psychology, 3 hours of coursework in the area of curriculum, 3 hours of coursework in the research option, 6 to 9 hours of coursework in some area of specialization, 2 hours of internship, 2 hours of directed studies (practicum), and 2 hours of independent study credit.

The M.S. (thesis option) adds 4 credits for the thesis and deletes the 2 credit practicum.

The IDT degree options are based on the same set of program components:

- **Program core component**: New courses presenting IDT content.
- **Research component**: Development of research skills.
- **Curriculum component**: Planning for and evaluating instruction.
- **Foundations component**: Fundamental background in psychology and philosophy of education.
- **Clinical component**: Opportunities for application.
- **Cognate component**: Opportunity for area or skill specialization

The IDT course requirements are organized within a major, foundations area, and cognate. The major consists of the IDT core, the curriculum requirement, and the research requirement. Students in both the M.Ed. and M.S. options will be required to complete 11 hours of coursework in IDT subject matter. This requirement includes:

<table>
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<tr>
<th>Course</th>
<th>Credits</th>
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<tr>
<td>IDT 510: Technology-Based Instruction</td>
<td>3</td>
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<td>IDT 520: Instructional Systems Design &amp; Development</td>
<td>3</td>
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<tr>
<td>IDT 530: Introduction to Computer-Based Instruction</td>
<td>3</td>
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<tr>
<td>IDT 590: Special Topics</td>
<td>2</td>
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<tr>
<td>IDT 591: Readings in IDT</td>
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<tr>
<td>IDT 592: Research in IDT</td>
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Master of Education
The Master of Education (M.Ed.) degree is primarily intended for students who plan to work in an education environment, either the K-12 schools or higher education. Individuals pursuing this degree will work primarily with instructors in assisting them to appropriately, effectively, and successfully integrate technology into their instruction. They are also likely to do some direct work with students in teaching skills associated with the use of technology. Students pursuing this degree will learn the theoretical issues associated with technologically supported instruction but their emphasis will be in the application of this knowledge in terms of best practice. An independent study project (research) is required and is considered a capstone experience. The independent study may address a practical problem or address a theoretical construct in the same way that a thesis does.

Master of Science
The Master of Science (M.S.) degree is primarily intended for students who plan to work in business, government, and industry developing and delivering technologically supported curriculum. Students from backgrounds other than education, e.g., nursing, engineering, aerospace, may prefer this option. This degree is available in two tracks. The M.S. (thesis option) is intended for those students who want to develop and utilize research skills in their work context. The M.S. (independent study option) is intended for those students who prefer to emphasize the development and evaluation of application and practice. Required coursework within the two options is consistent with this distinction between an emphasis on research or practice.

Cognate/Minor
The IDT program welcomes graduate students who want to learn more about the integration of technology with instruction. To complete a cognate or minor in IDT, students must take IDT 510, IDT 520, and IDT 530 — a total of nine semester hours. This will be considered by the IDT faculty to be a cognate or minor at the master’s level. If the student is a doctoral student and his or her department requires more credits for a minor, the IDT program chair will work
Kinesiology
Professors Brinkert (Chair), M. Short, S. Short (Graduate Director), Steen and Whitehead

Program Description
The Department of Physical Education and Exercise Science offers programs of study leading to the Master of Science (thesis or non-thesis option) with a major in kinesiology. The program provides students with opportunities to study the scientific foundations of kinesiology as well as several of its professional applications.

Current areas of concentration include:
- Exercise Physiology
- Fitness/Wellness
- Sports/Exercise Psychology

Preferred students, with the help of their advisors, develop programs of study to meet the degree requirements (see below), concentration requirements, and their own interests.

Admission Requirements
1. A minimum of 20 semester credits of undergraduate work in kinesiology, physical education, and related areas.
2. A personal statement of academic goals, which will be used to evaluate the adequacy and appropriateness of undergraduate preparation.
3. An applicant without satisfactory undergraduate preparation may be admitted to the program, but will be required to remove deficiencies by completing the necessary undergraduate courses without receiving graduate credit for them.
4. Satisfactory scores on the Graduate Record Examination (General Test).

Degree Requirements
1. A major of at least 30 (thesis) or 32 (non-thesis) credits or a major with a minor or a cognate.
3. Two courses in methods of data analysis, one of which must be in statistical analysis.
4. Completion of a thesis (4-6 credits) or independent study (2 credits).

Thesis Option
1. Establish the Faculty Advisory Committee and submit the Program of Study by the completion of nine graduate credits.

Non-Thesis Option
1. Select permanent advisor and submit the Program of Study by the completion of nine graduate credits.
2. Pass a written and oral final comprehensive examination administered by the department’s graduate faculty.

Courses
501. Introduction to Research in Kinesiology 4 credits. The study of quantitative and qualitative research methods used in the field of kinesiology.
502. Evaluation in Physical Education 3 credits. Prerequisite: PEXS 415 or consent of the instructor. The course will deal with the determination of standards for human performance in physical education and sport, and the principles to apply these standards for exercise prescription.
511. Theory and Practice in Physical Education Administration 2 credits. Prerequisite: PEXS 405 or consent of the instructor. Study of historical and philosophical evidence.
512. Theory and Practice in Sports Administration 2 credits. Prerequisites: PEXS 521 or consent of the instructor. The study of the knowledge and skills necessary to supervise teaching and coaching in sport and fitness education.
513. Theory and Practice in Intramural Sports Administration 2 credits. Prerequisite: PEXS 405 or consent of the instructor. Study of age-related performance changes across the life span.
521. Analysis of Physical Education Teaching and Coaching 3 credits. A research-based study of the psychological aspects that are associated with participation in exercise/physical activity.
522. Adapted Physical Education 3 credits. Prerequisite: PEXS 404 or consent of the instructor. Study of processes for planning, implementing, and evaluating curriculum in physical education.
524. Motor Development 3 credits. Prerequisites: PEXS 276 or PEXS 355, or consent of instructor. Study of age-related performance changes across the life span.
525. Motor Development 3 credits. Prerequisites: PEXS 276 or PEXS 355, or consent of instructor. Study of age-related performance changes across the life span.
529. Exercise Psychology 3 credits. Prerequisites: PEXS 440 or consent of the instructor. A research-based study of the psychological aspects that are associated with participation in exercise/physical activity.
530. Technology-Based Instruction: Applications and Methods 3 credits. A study of the various methods for using technology to deliver and/or support instruction: tutorials, drills, simulation, interactive video, instructional games, intelligent computer-based instruction, performance support systems, job aids, testing, distance learning, intelligent tutoring systems, and instructional management systems.
531. Instructional Systems Design and Development 3 credits. A study of methodologies for designing, developing, and evaluating technology-based instruction. Topics include needs analysis, job-hunt analysis, assessment of instructional outcomes, design of instructional units, development/production models, formative evaluation, and summative evaluation.
532. Introduction to Computer-Based Instruction 3 credits. An examination of the technology (hardware and software) for developing and delivering computer-based instruction (CBI). A study of the characteristics of high-quality CBI, addressing such topics as program structure, user interface, navigation, message/scene design, use of graphics, response analysis, feedback strategies, error checking, branching, and computer-managed instruction.
533. Special Topics in Instructional Design and Technology 1 to 3 credits. An in-depth study of a selected topic in instructional design and technology. Topics will vary with faculty expertise and current issues. Some topics would include simulations, responsive tutoring applications of the world-wide web, performance support systems, adaptive testing, intelligent tutoring systems, and hypermedia applications.
534. Readings in Instructional Design and Technology 1 to 3 credits. Selected readings with oral and written reports.
535. Research in Instructional Design and Technology 1 to 3 credits. Supervised research in areas of student interest.
536. Directed Studies in Instructional Design and Technology 1 to 3 credits. Individual project work in the design and development of technology-based instruction.
537. Independent Study 2 credits. The independent study requires the student to investigate a topic related to the major field of study and to prepare a formal report summarizing the investigation.
597. Thesis 4 to 9 credits. The thesis is an original research project completed under the supervision of a thesis committee.

University of North Dakota
The student may choose to complete part of the credit requirements through courses with linguistics content offered in other departments, e.g., English and Languages. The thesis will be based on the analysis of language data collected by the student or on theoretical or applied applications of data arising from language research.

Students majoring in Linguistics may wish to minor in English at UND. Those who do may be eligible for support as a Graduate Teaching Assistant in English during the academic year.

Students may take the linguistics courses even without applying to the M.A. program. They should apply directly to SIL, preferably by April 15 (April 1 for non-U.S. citizens). Application and other information is available at: http://www.und.edu/dept/linguistics/silund.htm, or call 1-800-292-1621. The chair of the Linguistics program is Mark Karan (mark_karan@sil.org). Further information is available from the SIL office on campus when the courses are in session during the summer (777-8105).

Courses

563. Phonology II. 3 credits. Prerequisite: Linguistics 450, 451, or equivalent. Phenological phenomena examined from a generative point of view; emphasis on creation and testing of hypotheses about the phonological systems of particular languages.

564. Syntax II. 3 credits. Prerequisite: Linguistics 452. Drawing on one or more theories from the generative tradition, this course explores syntactic forms that are commonly attested in human language. There is emphasis on the role of language universals and linguistic argumentation in arriving at analyses of language phenomena.

555. Special Topics in Physical Education and Exercise Science. 1 to 4 credits. Prerequisite: Consent of instructor. Investigation of special topics in the study of physical education and exercise science not included in current departmental course offerings.

560. Seminar in Kinesiology. 1 credit. Prerequisite: Consent of the instructor. Presentations of current topics based on reviews of literature. Repeatable to 4 credits. S/U grading only.

561. Critical Analysis and Synthesis in Kinesiology. 2 credits. Prerequisite: 20 hours of graduate credit. This course is designed to provide the student with the opportunity to critically analyze and synthesize selected topics in kinesiology.

585. Internship. 3 to 6 credits. Prerequisite: Appropriate foundational and major area coursework; consent of advisor and on-site supervisor. Professional experience and skill development through supervised placement at an approved work site (or other program) relevant to the course of study.

590. Individual Research in Kinesiology. 1 to 4 credits. Prerequisite: PEXS 501 and consent of the student’s faculty advisor. Library, laboratory or field research of an area coursework; consent of advisor and on-site supervisor. Professional experience and fitness wellness programs in different settings and for a variety of adult subpopulations and special groups.

555. Special Topics in Physical Education and Exercise Science. 1 to 4 credits. Prerequisite: Consent of instructor. Investigation of special topics in the study of physical education and exercise science not included in current departmental course offerings.

Linguistics

Special Summer Faculty: Bickford (Graduate Director), C. Black, H. Black, Clifton, Dooley, Everett, Karan (Chair), Levinsohn, Lowe, Marlatt, Meyer, Rhodes, Roberts, Tuggy and Weber

Program Description

The Master of Arts degree in Linguistics emphasizes training for independent linguistic field work, with heavy emphasis on phonetics, field methods, and problem-solving techniques. It is a cooperative program between UND and SIL International, and offered during a four-week summer session every year. Graduates of the degree will therefore be expected to spend at least two summers enrolled in the program on campus. (See the detailed information at: http://www.und.edu/dept/linguistics/lingma.htm.)

Admission Requirements

1. A minimum of 20 semester credits in linguistics and foreign language, of which at least 10 must be in

2. A minimum of 12 credits including 4 credits for a thesis; may include a minor or cognate (see the Degree Requirements section of the Graduate catalog).
Mathematics

Professors Bevelacqua, Collings, Dearden (Chair and Graduate Director), Dunnigan, Gilisdorf, Gregory, J. Ilams, M. Ilams, Khavanin, Metzger, Millspaugh, Peterson, Richards and Zerr

Program Description
The Department offers courses leading to the M.S. (thesis and non-thesis) and M.Ed. degrees with a major in mathematics.

Admission Requirements
1. The equivalent of a bachelor's degree with a major in mathematics. Students who have not completed the equivalent of Math 431 and Math 432, Advanced Calculus, as undergraduates will be required to do so as part of their graduate program. Students without the required degree, or equivalent, may be admitted but will be required to satisfactorily complete undergraduate courses to make up their deficiency before advancement to Approved status.

Degree Requirements

Master of Science
1. A major of 30 (thesis) or 32 (non-thesis) credits or a major with a minor or cognate.
2. Two full graduate sequences of the five available: 512-513, 515-516, 518-519, 520-521 and 541-542.
3. At least one additional mathematics graduate course.

The remainder of the program will be determined in consultation with an advisor based on the student’s mathematical interests, background and goals.

Master of Education
1. A minimum of 32 semester credits is required for the M.Ed. degree of which 16 credit hours of graduate work must be completed in mathematics, with at least 8 credits of mathematics being at the 500 level or above, including 2 hours of 997, Independent Study. (See Degree Requirements for Master of Education.)
2. Complete in undergraduate or graduate school—courses in algebra equivalent to Mathematics 441 and 442, a course in geometry equivalent to Mathematics 431, a course in geometry equivalent to Mathematics 409, and a course in probability and statistics equivalent to Mathematics 421.

Graduate Minor in Statistics
The requirements consist of 9 hours of which Math 421 and Math 422 are required if they were not taken as an undergraduate. The remaining credits may be selected from various probability and statistics-oriented courses in mathematics and other disciplines. For further information about this option, contact the chair of the Mathematics Department.

Courses

505, Seminar in Mathematics. 1 to 3 credits.
512, 513, Modern Analysis I, II. 5 credits each. Prerequisite: Math 432. Lebesque measure and integration, abstract measure and integration theory, product integrals, Hilbert and Banach spaces.
515, 516, Applied Mathematics. 3 credits each. Prerequisite: Math 266 or consent of instructor. The content of the course varies but includes topics in mathematical analysis such as: (1) ordinary or partial differential equations, (2) approximation theory and perturbation techniques, (3) modeling and computer simulation, (4) spectral functions, (5) numerical analysis, (6) variational methods, (7) transforms, (8) integral equations.
518, 519, Algebra I, II. 3 credits each. Prerequisite: Math 441 and 442. Group theory, maps and fields, vector spaces, Galois theory and finite fields.
520, 521, Topology I, II. 3 credits each. Prerequisite: Math 431. Point set topology, including metric spaces and such topics as homeomorphisms, separation axioms, compactness, connectedness, general convergence, compactification and metrizability.

541, Linear Statistical Models. 3 credits. Prerequisite: Math 422 or consent of instructor. Distributions of quadratic forms, general linear hypotheses of full rank, least squares, Gauss-Markoff theorem, estimability, parametric transformations, Cochran's theorem, projection operators and conditional inverses in generalized least squares, applications to ANOVA and experimental design models.
542, Advanced Topics in Statistics and Probability. 3 credits. Prerequisite: Math 422 or consent of instructor. The content of the course varies but may include (but is not restricted to) current topics in statistics and probability such as (1) time series, (2) sampling, (3) nonparametric statistics, (4) experimental design, (5) probability theory, (6) statistical theory, (7) multivariate statistical analysis.
403, Theory of Probability. 3 credits.
405, Selected Topics in Mathematics. 1 to 3 credits.
406, Combinatorics. 3 credits.
409, Geometry. 3 credits.
412, Differential Equations. 3 credits.
415, Topics in Applied Mathematics I to 3 credits.
416, Topics in Statistics. 1 to 3 credits.
421, 422, Statistical Theory 6 credits.
431, 432, Advanced Calculus. 6 credits.
435, Theory of Numbers. 3 credits.
441, Abstract Algebra. 3 credits.
442, Linear Algebra. 3 credits.
450, Elements of Topology. 3 credits.
460, Mathematical Modeling. 3 credits.
461, 462, Numerical Analysis. 6 credits.
465, Operations Research. 3 credits.
471, Introduction to Complex Variables. 3 credits.
494, 495. Reading Course in Mathematics. Credit not to exceed 1 hour a semester and total credit not to exceed 3 hours.

Mechanical Engineering

Professors Ames, Banditopadhyay, Bibel, Greval, Moen (Chair), Ness, Semke and Zahui

Program Description
The Department of Mechanical Engineering offers graduate programs leading to either the Master of Science (MS) or Master of Engineering (MEngr) degrees. The MS degree is a research-oriented degree that is available in either thesis or non-thesis options. The non-thesis M.S. degree requires completion of an independent study. The MEngr degree is an engineering practice-oriented degree that requires completion of an engineering design project.

The department offers combined BS/Master’s programs that allow a student to complete a master’s degree in as little as one year beyond the bachelor’s degree. The master’s degree may be either an MS or MEngr. See “Combined Degree Program” under the School of Engineering and Mines section for additional details.

Admission Requirements
1. Students who hold a BS degree in Mechanical Engineering from an ABET accredited program and have an acceptable GPA are accepted without the need for the Graduate Record Exam (GRE).
2. Students who hold an undergraduate engineering or science degree other than mechanical engineering may be admitted to provisional or qualified status with an obligation to acquire additional background in mechanical engineering as appropriate.)
3. The GRE general test will be required for those applicants with undergraduate degrees from other than ABET accredited programs.
4. Students seeking admission to the MS program must have an overall undergraduate GPA of at least 2.75 or a GPA of at least 3.00 for the junior and senior years of their undergraduate program.
5. Students seeking admission to the MEngr program must have an overall undergraduate GPA of at least 2.50 or a GPA of at least 2.75 for the junior and senior years of their undergraduate programs.
6. Students seeking admission to a combined BS/Master’s program must have a GPA of at least 3.0 at the time of admission.

Degree Requirements

Master of Science

Thesis option—completion of a research project and its presentation in a thesis.

Non-thesis option—completion of an independent study.

Master of Engineering

1. Completion of a design project.
2. At least 12 credits of engineering design and at least 9 credits of engineering science, basic science and/or mathematics.

The research project, independent study, or design project may be from interdisciplinary areas such as bioengineering or environmental engineering, or they may be topics in design, manufacturing processes, vibrations, stress analysis, materials, power, fluid mechanics, heat transfer, thermodynamics, or combustion.

Course Offerings

A minimum of one 500-level course will be offered each semester. The course will alternate between the thermal science-fluids-energy areas and the mechanics-materials-manufacturing-processes areas. All graduate students who have not completed their coursework will be required to enroll in these courses. A course will not be repeated in less than two years unless by student demand. All other courses listed will be taught on appropriate student demand.

Courses

514. Processing of Advanced Materials. 3 credits. Prerequisite: ME 311. Structural ceramics, metal matrix composites, superalloys are considered as advanced materials because of their high specific strength. Modulus and high temperature resistance. However, machining of these materials presents a big challenge to manufacturing engineers. The course will discuss in detail the latest achievements for cost-effective machining of these materials.

523. Advanced Machine Design. 3 credits. Prerequisite: ME 426. Advanced design and analysis of machine components; kinematic synthesis and analysis of mechanisms, force analysis, rotor dynamics, gyrodymanics, stresses in thin cylinders and flywheels, lubrication, statical and dynamical considerations, energy methods, curved beams.

526. Advanced Vibrations. 3 credits. Prerequisites: Mechanical Engineering 426. Advanced vibration theory including the solutions of multi-degree of freedom coupled systems; continuous systems; energy methods, non-linear vibrations.

529. Advanced Finite Element Methods. 3 credits. Prerequisites: ME 429 or consent of instructor. Computer-aided techniques for finite element analysis of engineering systems. Topics include solution algorithms for nonlinear methods, large deflection, inelastic and contact analysis, and analysis of vibrating systems.


574. Advanced Heat Transfer. 3 credits. Prerequisite: Mechanical Engineering 474, or consent of instructor. Advanced conduction in isotropic media in two and three dimensions steady and unsteady problems. Advanced convection including solution of Prandl Boundary layer equations. Numerical methods; Fourier series, Bessel functions, LaPlace transforms, and error functions. Radiative heat transfer.

590. Special Topics. 1 to 6 credits. Prerequisite: Departmental approval. Investigation of special topics dictated by student and faculty interests. May be repeated up to a total of 6 credits.

591. Research in Mechanical Engineering. 1 to 6 credits.

595. Design Project. 3 to 6 credits. Prerequisite: Restricted to Master of Engineering students and subject to approval by the student’s advisor. A three to six credit course of engineering design experience involving individual effort and formal written report. S/U grading only.

416. Advanced Manufacturing Processes. 3 credits.
426. Mechanical Vibrations. 3 credits.
429. Intro to Finite Element Analysis. 3 credits.
446. Gas Turbines. 3 credits.
449. Internal Combustion Engines. 3 credits.
451. Heating and Air Conditioning. 3 credits.
476. Intermediate Fluid Mechanics. 3 credits.
490. Special Laboratory Problems. 1 to 3 credits.

Microbiology and Immunology

Professors Bradley, Flower, Hill, Melvold (Chair), Nilles, Young (Graduate Director)

Program Description

The Department of Microbiology and Immunology offers graduate programs leading to the M.S., Ph.D., and Ph.D./M.D. degrees. Graduate study is available in a number of disciplines including cell biology, pathogenic microbiology, genetics, immunology, immunogenetics, autoimmunity, microbial physiology, molecular biology, and virology. The goals of the program are to produce scientists with a broad knowledge and experience for careers in research and teaching in universities, clinical and research laboratories and in fields of related employment. Additional background is available in disciplines such as biochemistry, computer sciences, statistics and electron microscopy in other departments in the School of Medicine and the University. Students rotate through each faculty member’s laboratory in their first semester of graduate study. Subsequent to this experience the student and his/her advisor are expected to choose a specific research program.

Core requirements for M.S. and Ph.D. degrees include courses in biochemistry, microbiology, molecular biology, immunology, statistics and graduate seminars. For both the M.S. and Ph.D. degrees students are expected to carry out original research suitable for publication in a professional journal.

Master’s degree candidates are required to write a thesis and defend their research in a final oral examination. Doctoral candidates are required to successfully complete both a written and oral comprehensive examination as well as to write a dissertation and defend their research in a final oral examination.

Research Facilities

A new, modern science building and an adjacent bioinformatics learning resources center which house the research laboratories, library and teaching facilities of the School of Medicine were constructed in 1994. These facilities provide a state-of-the-art environment for teaching and research. The Department of Microbiology and Immunology occupies the fourth floor of the research building. Other basic science departments in this facility include the Departments of Anatomy and Cell Biology, Biochemistry and Molecular Biology, Pharmacology, and Physiology and Therapeutics. Additional resources include the Department of Pathology, the Energy and Environmental Research Center, the USDA Human Nutrition Center and the Computer Center. The proximity of these departments and facilities provides the opportunity for cooperative and collaborative research and training in the basic sciences.

Financial Assistance

Graduate students are supported by University fellowships, teaching assistantships and research assistantships. The stipends are competitive, and normally provide support for the entire calendar year and include a waiver of tuition and fees. Applications for admission are accepted throughout the year. Applications for Fall Semester should be received no later than February 15 since the awarding of financial aid for the next academic year is decided in March and early April.

Admission Requirements

1. Bachelor’s degree from an accredited institution and good academic record in the sciences.
2. A minimum grade point average of 3.0 on a 4.0 scale.
3. The Graduate Record Examination Test.
4. A course in Microbiology and a background in chemistry, preferably through organic chemistry, are recommended.

**Student Group**

The department enrolls 10-12 graduate students in its program. This departmental enrollment ensures a close association between a faculty advisor and student for personal guidance and research training yet provides an adequate number of students for individual and group interaction. Students have the opportunity to present and participate in journal clubs, general seminars, and research seminars. All graduate students are expected to participate in teaching during their tenure in the Department.

**Degree Requirements**

**Master of Science**

See Graduate School Requirements for the M.S. in the Degree Requirements section.

**Doctor of Philosophy**

See Graduate School Requirements for the Ph.D. in the Degree Requirements section. Qualified applicants with a M.S. degree may apply directly to the Ph.D. program. A student enrolled currently in the M.S. program may by-pass the M.S. degree and continue directly into the Ph.D. program. Requirements for these options include:

- Admission into the graduate program with approved status.
- An overall GPA of no less than 3.50 for all graduate work.
- Successful completion of the Departmental Qualifying Diagnostic Examination is required to bypass the M.S. degree.
- This examination will consist of a written and oral presentation of the student’s proposed dissertation research.

**Joint Ph.D.-M.D. Degree**

See Program Requirements for Ph.D./M.D. Degree in the Degree Requirements section.

**Courses**

Courses marked with an asterisk (*) are offered in alternate years only.

- **BIMD 500. Cellular and Molecular Foundations of Biomedical Science.** 7 credits. Prerequisites: A) one year of organic chemistry or B) one semester of organic chemistry and one course in either biochemistry or cell biology or C) permission of course director. The focus of this interdepartmental team-taught course will be in areas that are fundamental to all biomedical science graduate programs. Emphasis will be on developing a strong grounding in biochemistry, cell biology and molecular biology with themes covering protein, metabolism, information flow, vectors, membranes, cell signaling, cell shape and movement, cell growth and division, and immunology.

- **BIMD 510. Basic Biomedical Statistics.** 2 credits. Prerequisites: BIMD 500 or permission of course director. A series of lectures and demonstrations to provide students with the basic rationale for the use of statistics in the assessment of biomedical data and a selection of the most common and useful statistical tests.

- **BIMD 512. Seminars in Biomedical Sciences.** 1 credit. Corequisite: BIMD 500 or permission of course director. Students will attend a weekly school-wide seminar series. Students will further explore aspects of scientific literature and fundamentals of scientific writing and have opportunities to interact with intramural seminar speakers.

- **BIMD 513. Seminars in Biomedical Sciences.** 1 credit. Prerequisites: BIMD 512 or permission of course director. Students will attend a weekly school-wide seminar series. Students will further explore aspects of scientific literature and fundamentals of scientific writing and have opportunities to interact with intramural seminar speakers.

- **BIMD 514. Advanced Immunology Laboratory.** 2 credits. Prerequisites: Microbiology and biochemistry or consent of instructor. Genetic mechanisms in microorganisms, antigenesis, structure of genetic material, genetic engineering. Selected Readings.

- **BIMD 515. Advanced Topics.** 2 credits. Prerequisite: Previous basic course in the area to be covered. A series of topics in microbiology and immunology presented on an episodic basis. The topics may vary, but are expected to include: (A) Immunology, (B) Infectious Diseases, and (C) Molecular Biology.

- **BIMD 517. Advanced Immunology Laboratory.** 2 credits. Prerequisite: Microbiology 302 or equivalent. A series of reports of current scientific literature in Immunology and Immunopathology. S/U grading only.

- **BIMD 590. Research in Microbiology.** 2 to 6 credits. Hours arranged. Advanced problems in microbiology and related fields.

- **BIMD 591. Special Problems in Microbiology.** 1 to 6 credits. Short term research projects performed under the supervision of a department faculty member. Intended to provide interested capable students with a challenge and an opportunity to conduct scientific research in microbiology. Arranged by consultation with participating faculty members.

**Music**

Professors Anderson, Blake, Einarson, Gallo, Keyser, Lewis, Long, Norman, Popejoy, Rheude, Towne (Chair) and Wittgraf

**Program Description**

Music is offered at the University of North Dakota in the belief that it contributes to the aesthetic development of mankind. The UND Music Department seeks to provide a multi-faceted environment of excellence in which students and faculty realize their full potential as musicians and scholars.

As a learning community, we value mutual respect and cooperation and we acknowledge local roots and a global perspective.

The Music Department offers graduate programs leading to the Master of Music degree with specializations in Music Education, Voice and Piano Performance/Pedagogy, Composition, Choral Conducting, and Instrumental Conducting. The department is an accredited institutional member of the National Association of Schools of Music.

**Admission Requirements**

1. A bachelor’s degree with a major in music with competence in the specialty in which graduate study is desired.
2. At least a 2.75 overall GPA and at least a 3.00 GPA for the last two years of undergraduate work.

The following supplementary materials should accompany applications for the programs below:

**M.M. in Performance or Pedagogy**

1. Audition on the major performing instrument or voice, either at UND or by tape recording of a recent live performance.
2. List of repertoire studied on the major instrument or voice.
M.M. in Vocal Performance or Pedagogy

1. Evidence of two years’ satisfactory study of French, German, or Italian, and knowledge of the dictation of all three.

M.M. in Composition

1. A representative sample of compositions.

Ph.D. in Teaching and Learning, Music Education Major

See additional admission requirements under Education: Teaching and Learning Doctoral Program.

All students admitted to graduate study in music, whether to Approved, Qualified, or Provisional status, will be examined upon their arrival on campus in order to provide appropriate advisement for the beginning of graduate study. These examinations will cover Music History, Music Theory, and, for Vocal Performance majors, French, German, and Italian diction.

Achievement of a minimum score on the advisory examinations or completion of Music Theory Review (MUSC 501) and Music History Review (MUSC 505) is required prior to registration in Music 502 and 508.

Degree Requirements

Requirements for the Ph.D. in Teaching and Learning, Music Education major are described under Education: Teaching and Learning Doctoral Program.

The program of study for the Master of Music degree must include at least 32 credit hours. The degree is available in five specializations: (1) Music Education, (2) Performance or Pedagogy (Voice, Piano or Organ), (3) Composition, (4) Choral Conducting, and (5) Instrumental Conducting.

Residence and Transfer Requirements

The specializations in Conducting require at least a one-year residency. Other specializations have no residency requirement.

Music Education Specialization

INDEPENDENT STUDY OPTION

MUSIC EDUCATION COURSES (17 credits)

MUSC 500 Introduction to Graduate Study 3 credits
MUSC 502/508 Music History/Music Theory 6 credits
MUSC 509 Trends in Music Education 3 credits
MUSC 598 Research in Music Education 3 credits
MUSC 599 Thesis (Music Education Topic) 4 credits

Electives from outside Music Education 2 credits

CORE COURSES (9 credits)

MUSC 500 Introduction to Graduate Study 3 credits
MUSC 502/508 Music History/Music Theory 6 credits

Additional Undergraduate Coursework to Fulfill Licensure Requirements (39 credits):

MUSC 140 (4-5 credits), 242 (choral specialization), 340, 423, 427 and 445 or 446. T&L 200*, 252, 286, 300*, 433, 460*, 486, 487. * Available via Correspondence Study

All students must demonstrate keyboard proficiency equivalent to level 3; keyboard principals must demonstrate an equivalent level of vocal proficiency. Some 300 and 400 level courses may be permitted to fulfill graduate elective requirements, subject to graduate school academic policies.

Performance or Pedagogy Specialization (Vocal/Keyboard)

CORE COURSES (9 credits)

MUSC 500 Introduction to Graduate Study 3 credits
MUSC 502/508 Perspectives in Music Theory/History 6 credits
### University of North Dakota

#### MUSC 595 Individual Lessons (Conducting) 2 credits

#### MUSC 561 Advanced Choral Conducting 2 credits

#### MUSC 562 Advanced Instrumental Conducting 2 credits

#### Students will choose either the Performance or the Pedagogy Track.

### Performance Track

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MUSC 596 Individual Lessons</td>
<td>8</td>
</tr>
<tr>
<td>MUSC 599 Graduate Recital</td>
<td>2</td>
</tr>
<tr>
<td>MUSC 997 Independent Study</td>
<td>2</td>
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</tbody>
</table>

### Pedagogy Track

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSC 596 Individual Lessons</td>
<td>4</td>
</tr>
<tr>
<td>MUSC 553 Vocal Pedagogy II</td>
<td>3</td>
</tr>
<tr>
<td>or MUSC 554 Keyboard Pedagogy II</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 590 Vocal Internship</td>
<td>1</td>
</tr>
<tr>
<td>or MUSC 591 Keyboard Internship</td>
<td>1</td>
</tr>
<tr>
<td>MUSC 597 Special Projects (Pedagogy topic)</td>
<td>2</td>
</tr>
<tr>
<td>MUSC 997 Independent Study</td>
<td>2</td>
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</tbody>
</table>

### CORE COURSES (9 credits)

<table>
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<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MUSC 500 Introduction to Graduate Study</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 502/508 Music Theory/Music History</td>
<td>6</td>
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</tbody>
</table>

### OTHER STUDIES (11 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MUSC 551 Vocal Pedagogy I</td>
<td>3</td>
</tr>
<tr>
<td>or MUSC 552 Keyboard Pedagogy I</td>
<td>3</td>
</tr>
<tr>
<td>ELECTIVES</td>
<td>5</td>
</tr>
</tbody>
</table>

### Electives:

For those in the composition concentration, the final project in composition replaces an independent study.

#### Choral Conducting Specialization

### Core Courses (12 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSC 506 Advanced Composition</td>
<td>8</td>
</tr>
<tr>
<td>MUSC 593 Final Project in Composition</td>
<td>4</td>
</tr>
<tr>
<td>MUSC 500 Introduction to Graduate Study</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 502/508 Music Theory/Music History</td>
<td>6</td>
</tr>
</tbody>
</table>

### Other Studies (4 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MUSC 561 Advanced Choral Conducting</td>
<td>2</td>
</tr>
<tr>
<td>or MUSC 562 Advanced Instrumental Conducting</td>
<td>2</td>
</tr>
<tr>
<td>MUSC 594</td>
<td>2</td>
</tr>
<tr>
<td>or MUSC 595 Individual Lessons: Piano</td>
<td>2</td>
</tr>
<tr>
<td>ELECTIVES</td>
<td>7</td>
</tr>
</tbody>
</table>

### Electives:

For those in the composition concentration, the final project in composition replaces an independent study.

#### Instrumental Conducting Specialization

### Core Courses (13 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MUSC 561 Advanced Choral Conducting</td>
<td>2</td>
</tr>
<tr>
<td>MUSC 562 Advanced Instrumental Conducting</td>
<td>2</td>
</tr>
<tr>
<td>MUSC 595 Individual Lessons (Conducting)</td>
<td>2</td>
</tr>
<tr>
<td>MUSC 599 Graduate Recital (Conducting)</td>
<td>2</td>
</tr>
<tr>
<td>MUSC 524 Choral Literature</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 997 Independent Study</td>
<td>2</td>
</tr>
</tbody>
</table>

### Other Studies (7 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MUSC 594</td>
<td>2</td>
</tr>
<tr>
<td>MUSC 580 Choral Ensemble Performance</td>
<td>2</td>
</tr>
<tr>
<td>MUSC 551 Vocal Pedagogy I</td>
<td>3</td>
</tr>
<tr>
<td>ELECTIVES</td>
<td>3</td>
</tr>
</tbody>
</table>

### Electives:

For those in the composition concentration, the final project in composition replaces an independent study.

#### Electives:

For those in the composition concentration, the final project in composition replaces an independent study.
The College of Nursing offers graduate programs leading to the Ph.D. or the Master of Science (M.S.) degree with a major in nursing.

Doctor of Philosophy in Nursing

The purpose of the program is to prepare nurses for research and faculty roles with a research emphasis on care of vulnerable and diverse populations. The program is designed with both post-baccalaureate and post-master’s entry points. Nurses who have baccalaureate degrees in nursing, but have master’s degrees in other fields, may qualify for up to 36 hours of credit toward the doctoral degree. Credit will be awarded only for courses in which a grade of B or better has been achieved.

Degree Requirements

Students must complete a minimum of 90 semester credits of post-baccalaureate work, including an original dissertation. These credits must be distributed as follows:

1. Scholarly Tools for the Ph.D. (9-12 credits). Courses in statistics and/or qualitative analytical approaches.
2. Theory and Research (18 credits). N570; N571; N574; and N575 and an additional 6 credits of coursework in theory and research selected by the student in consultation with the student’s faculty advisory committee.
3. Nursing Science (18 credits). N490 and N576 and 12 additional credits of coursework in nursing theory and practice selected in consultation with the student’s faculty advisory committee.
4. Elective Support (15 credits). Courses will be selected by the student in consultation with the student’s faculty advisory committee.
5. Functional Component (9-12 credits). Courses will be selected to develop a thrust as an educator. Students with no teaching experience will be required to complete a teaching residency.
6. Comprehensive Examination. Students must successfully complete a written comprehensive examination prior to advancement to candidacy and approval of the dissertation proposal.
7. Final Examination. A final examination will be scheduled and administered according to the rules of the graduate school.

Residency

Students will be required to attend two consecutive summer sessions on the UND campus.

Transfer Credit

A maximum of 36 semester credits may be transferred from a master’s program.

Awarding of Master’s Degree

Students who entered without a master’s degree in nursing may apply for the M.S. with a major in nursing upon completion of 46 credits of coursework that includes N500, N525/526, N530, N510, N511, N544, N545, N555 or N565 and completion of either a thesis, the non-thesis project, or the doctoral comprehensive examination.
**Master of Science**

The master of science program offers five areas of specialization:

1. Nurse Anesthesia
2. Clinical Nurse Specialist in Nursing Therapeutics
3. Family Nurse Practitioner (FNP)
4. Health Administration in Nursing
5. Psychiatric and Mental Health Nursing

The program is targeted to prepare advanced practice nurses in areas of clinical specialization, or as nurse practitioners, nurse educators or nurse administrators; and to expand the scientific knowledge for nursing practice through research. The entire program is accredited by the Commission on Collegiate Nursing Education (CCNE). The course of study for Nurse Anesthesia is accredited by the Council on Accreditation (COA) for Nurse Anesthesia Education Programs.

**Admission Requirements**

1. A bachelor’s degree in nursing from an NLNAC or CCNE accredited program. (Foreign schools will be evaluated on an individual basis.)
2. A minimum GPA of 3.00 for the last two years of baccalaureate study.
3. An undergraduate or graduate course in statistics.
4. Current R.N. licensure. (Photocopy must be attached to application.)
5. A minimum of one year of experience as a registered nurse.
6. Additional requirements for Nurse Anesthesia are: an undergraduate course in biochemistry (Biochemistry 301 or equivalent), one year of critical care nursing experience (two years are preferred), and a successful interview.
7. An additional requirement for the Family Nurse Practitioner specialization is completion of a successful interview.
8. Meet current health and immunization requirements of the College of Nursing before being permitted to enroll in a clinical nursing course.

Applications will be considered as they are completed except for Nurse Anesthesia, which must be received by December 15. Priority is given to those who apply to the Family Nurse Practitioner specialization by January 15. Students anticipating full-time study should plan to start their course of study in the fall.

**Non-Degree Students:**

Students may enroll as non-degree seeking through the Graduate School. Those students selecting their major area of concentration will be assigned a nursing advisor and may take up to 24 credit hours of coursework that will transfer once they have selected a nursing specialization. These 24 credit hours are limited to the following courses:

- N500 Theories and Concepts in Nursing (3)
- N501 Complementary Health Care Therapies (3)
- N510 Advanced Physiology/Pathophysiology I (3)
- N526 Ethical, Legal, and Health Policy Issues (3)
- N530 Research Design and Methods in Nursing (3)
- N532 Family Nursing: Theory, Research and Practice (3)
- N556 Epidemiology (3)

**Degree Credits:**

Thesis or the non-thesis options are available for all specializations. The thesis option requires completion of four credits of 998. The non-thesis option requires completion of four project-related credits, including 997 (two credits) and two credits of 590, 591, nursing electives, and/or electives in a related field. There is no residency requirement.

Anesthesia Nursing requires completion of 500; 504; 507; 510; 511; 517; 520; 527; 530, 597; and the 4 thesis or directed study and independent study-related credits. PPT 501 and one credit hour of N590 may be substituted for N504 and 506. Students complete 32 credits of 597 (Advanced Clinical Practicum) to comply with accreditation standards for supervised practice hours in anesthesia nursing.

Clinical Nurse Specialist in Nursing Therapeutics requires completion of 500; 510; 511; 526; 530; 533; 539; 544; 545; 551; 555/560/565; 6 credits of electives; and the 4 thesis or Independent Study-related credits.

Family Nurse Practitioner requires completion of 500; 510; 511; 523; 526; 530; 532; 534; 535; 536; 539; 555; 556; 597; and the 4 thesis or independent study-related credits. Students complete 14 credits of 597, Advanced Clinical Practicum to comply with National Organization of Nurse Practitioner Faculty (NONPF) guidelines for supervised practice hours.

Health Administration in Nursing requires completion of 500; 530; 562; PSCI 552; PSCI 593; PSCI 551; Econ 575; 6 credits of cognate electives; and the 4 thesis or independent study-related credits.

**Certificates in Nursing**

Two post-master’s certificate programs are offered including the Family Nurse Practitioner Certificate and the Nurse Anesthesia Certificate. The certificate programs are offered to nurses with master’s degrees in nursing who are seeking additional career options.

**Admission Requirements**

1. Master’s degree in nursing.
2. Licensure as a registered nurse in North Dakota.
3. Additional requirements for Nurse Anesthesia are: an undergraduate course in biochemistry (Biochemistry 301 or equivalent), one year of critical care nursing experience (two years preferred), and a successful interview.
4. An additional requirement for the Family Nurse Practitioner is completion of a successful interview.

**Family Nurse Practitioner**

A total of 45* or 46 credits is required for the Family Nurse Practitioner Certificate. These courses meet the requirements of the American Nurses Credentialing Center. The following courses are required.

- N510 Advanced Physiology/Pathophysiology I........... 3 credits
- N511 Advanced Physiology/Pathophysiology II .......... 3 credits
- N523 Health Promotion ....................................... 3 credits
- N524 Health Education: Theory, Research & Practice .. 3 credits
- N534 Specialization I: Health Conditions ................. 3 credits
- N535 Drug Therapy I ........................................... 2 credits
- N536 Specialization II: Health Conditions ............... 4 credits
- N539 Drug Therapy II ......................................... 2 credits
- N555 Role Dimensions: Seminar and Practicum* ........ 3 credits
- N556 Epidemiology ............................................. 3 credits
- N597 Practicum I .............................................. 4 credits
- N597 Practicum II ............................................. 5 credits
- N597 Practicum III ............................................. 5 credits

Total Credits ..............................................45–46 credits

*Students who have previously completed N555 will enroll in N590, Independent Study for 2 credit hours.
Anesthesia Nursing

A total of 59 credits is required for the Nurse Anesthesia Certificate. These courses meet the requirements of the Council on Accreditation for Nurse Anesthesia Educational Programs.

N504 Advanced Pharmacology I ........................................... 3 credits

N506 Advanced Pharmacology II .............................................. 3 credits or

PPT 501 General Principles of Medical Pharmacology .......... 5 credits and

N590 Directed Studies: Pharmacology of Anesthetic Agents .................................................. 1 credit

N507 Anesthesia Seminar & Clinical Practicum I ............. 4 credits

N511 Advanced Physiology/Pathophysiology I ................. 3 credits

N517 Anesthesia Seminar & Clinical Practicum II ........... 4 credits

N520 Professional Role Development for Nurse Anesthesia ............................................. 3 credits

N527 Anesthesia Seminar & Clinical Practicum III .......... 4 credits

N597 Advanced Clinical Practicum ............................................. 32 credits

Total Credits ............................................................................. 59 credits

Courses

506. Theories and Concepts in Nursing. 3 credits. The focus of this core course is on understanding and integrating the theories and concepts which guide clinical practice, curriculum development, research, and nursing administration.

501. Complementary Health Care Therapies. 3 credits. Focus of this interdisciplinary elective course is the analysis of theory, research, and practice of complementary health therapies. The goal of this course is not to provide skills training in any specific technique. Instead, the course is intended to augment the health care professional's education by providing a broad overview of selected complementary therapies commonly used in the United States. Legal and ethical implications will be analyzed.


507. Anesthesia Seminar & Clinical Practicum II. 4 credits. Focus of this course is an in-depth analysis of the professional components of anesthesia practice, related physical, chemical and pharmacological concepts and an introduction to pathophysiological principles applied to problems encountered in the surgical/anesthesia setting. Analysis, integration, and utilization of research to improve practice is emphasized. Incorporates four hours of clinical lab experience weekly.

510. Advanced Physiology/Pathophysiology I. 3 credits. Prerequisite: Admission to graduate study. Normal physiologic functions associated with cellular structure and function. Emphasis on the human body and its organ systems, both separately and integrated in whole activities.

511. Advanced Physiology/Pathophysiology II. 3 credits. Prerequisites: N510 or consent of instructor. Continuation of N510. Physiologic and pathophysiologic functions of the human body and its organ systems, both separately and integrated in whole activities.

517. Anesthesia Seminar & Clinical Practicum II. 4 credits. Focus of this course is an in-depth analysis of the professional components of anesthesia practice, related physical, chemical and pharmacological concepts and an introduction to pathophysiological principles applied to problems encountered in the surgical/anesthesia setting. Analysis, integration, and utilization of research to improve practice is emphasized. Includes four hours of clinical lab experience weekly.

520. Professional Role Development for Nurse Anesthesia. 3 credits. Prerequisite: Admission to the Nurse Anesthesia Specialization. Corequisite: NURS 500. The focus of this course is on the identification and analysis of the professional components of nurse anesthesia practice, emphasizing role development, medical, ethical and legal responsibilities, scope of practice and standards of care. Other areas that will be explored include quality assurance, the legislative process, credentialing, reimbursement, professional organization, conflict resolution and analyzing complex practice models. Overview of the history of nurse anesthesia practice as well as an in-depth analysis of current trends and issues affecting the delivery of anesthesia services are included in the course content.

523. Health Promotion Through the Lifespan. 3 credits. Prerequisites: N510, 556. An introduction to the basic knowledge and skills necessary to promote the health and well-being of individuals and populations. Analysis, integration, and utilization of research findings to promote healthy practices are emphasized.

525. Ethical, Legal, and Health Policy Issues. 3 credits. This course emphasizes health policy issues within the context of legal and ethical concepts. Students will examine and debate health policies in current practice. They will broaden their ability to analyze, implement, and evaluate health policy issues.

527. Anesthesia Seminar and Clinical Practicum III. 4 credits. Prerequisites: N517. The course includes a detailed investigation and analysis of anesthetic management of patients with complex co-existing diseases. Exploration and determination of various anesthesia care modalities to optimize patient care and safety are considered. Analysis, integration, and utilization of research to improve practice is emphasized. An extensive clinical experience component is included.

530. Research Design and Methods in Nursing. 3 credits. Prerequisite: NURS 500 or consent of instructor. Corequisites: NURS 500. Core course focuses on examining the research process in nursing, critiquing research nursing, and writing a research proposal. Knowledge of statistics is essential.

532. Family Nursing Theory, Research and Practice. 3 credits. Theoretical and scientific foundations for advanced practice nursing care for the family-as-a-system in health and illness across the lifespan.

534. Specialization in Family Nurse Practitioner I: Management of Health Conditions in Primary Care. 3 credits. Prerequisite: N523. Clinical decision-making skills are developed in the diagnosis and management of acute and chronic health conditions throughout the lifespan. Health promotion, health protection, disease prevention, health maintenance, and restoration are emphasized.

535. Drug Therapy for Advanced Nursing Practice: Common Health Conditions. 2 credits. Prerequisites: N510. Pharmacological agents utilized to treat common acute and chronic health problems are explored in depth. The course focuses on advanced nurse practice roles related to prescription, pharmacological and therapeutic applications of the drugs.

536. Specialization in Family Nurse Practitioner II: Management of Health Conditions in Primary Care. 4 credits. Prerequisites: N 534 and 555. The focus of this course is on the development of clinical competency in the management of common acute and chronic conditions in all age groups. Concepts from the basic and social sciences are applied in developing intervention strategies. The role of the NP as case manager is emphasized.

537. Graduate Cooperative Education. 1-3 credits. The focus of this course is on the development of clinical competency in the management of common acute and chronic health problems are explored in depth. The focus is on advanced nurse practice roles related to prescription, pharmacological and therapeutic applications of the drugs.

538. Psychiatric and Mental Health Nursing I. 6 credits. Prerequisites or Corequisites: N500, 526, 530, 542, 555, and 6 credit hours in psychotherapeutic modalities. This course focuses on advanced assessment, client-nurse relationship, and selected therapeutic interventions. Client care is focused on prevention of illness and promotion of health in selected populations. Application of theory and research to advanced practice roles and policy development is examined throughout the course.

539. Psychopharmacology. 3 credits. Prerequisites: N541. The focus of this course is on the identification and analysis of the professional components of anesthesia practice, related physical, chemical and pharmacological concepts and an introduction to pathophysiological principles applied to problems encountered in the surgical/anesthesia setting. Analysis, integration, and utilization of research to improve practice is emphasized. Includes four hours of clinical lab experience weekly.

540. Psychiatric and Mental Health Nursing II. 6 credits. Prerequisite: N540. The focus of this course is on the identification and analysis of the professional components of anesthesia practice, related physical, chemical and pharmacological concepts and an introduction to pathophysiological principles applied to problems encountered in the surgical/anesthesia setting. Analysis, integration, and utilization of research to improve practice is emphasized. Includes four hours of clinical lab experience weekly.

542. Psychopharmacology. 3 credits. Prerequisites: N541. The course provides the clinical nurse specialist with a firm foundation in psychopharmacology principles and beginning prescriptive authority. Content covered in the course includes antidepressants, antipsychotics, anxiolytics, mood stabilizers, hypnotics, and medications for attention deficit/hyperactivity disorder and dementia. Electroconvulsive therapy as a major psychiatric therapy will also be discussed. Emphasis will be placed on the use of case studies in the practical application of class content.

543. CNS in Nursing Therapeutics I. 4 credits. Prerequisites or corequisites: N500, 526, 530, 535, and 539. This course focuses on clinical nurse specialists' care of clients in diverse clinical settings, both acute care and community-based. Developmental, physiological, and psychosocial concepts, theory and research findings are utilized to assess and plan care for vulnerable individuals, families, and populations. Analysis, integration, and utilization of research findings to improve clinical practice are emphasized.

544. CNS in Nursing Therapeutics II. 4 credits. Prerequisites: N544. The major focus of this course is on the identification and analysis of the professional components of anesthesia practice, related physical, chemical and pharmacological concepts and an introduction to pathophysiological principles applied to problems encountered in the surgical/anesthesia setting. Analysis, integration, and utilization of research findings to improve clinical practice are emphasized.

545. Family Nursing Theory, Research and Practice. 3 credits. Prerequisite: N544. The major focus of this course is on the identification and analysis of the professional components of anesthesia practice, related physical, chemical and pharmacological concepts and an introduction to pathophysiological principles applied to problems encountered in the surgical/anesthesia setting. Analysis, integration, and utilization of research findings to improve clinical practice are emphasized.

548. Nursing Administration: Practicum and Seminar. 3 credits. Prerequisite: N548. The major focus of this course is on the identification and analysis of the professional components of anesthesia practice, related physical, chemical and pharmacological concepts and an introduction to pathophysiological principles applied to problems encountered in the surgical/anesthesia setting. Analysis, integration, and utilization of research findings to improve clinical practice are emphasized.

551. Case Management for Health Care. 3 credits. This interdisciplinary course provides an introduction to case management techniques to broaden and strengthen the role of the provider in health care.

555. Role Dimensions of Advanced Nursing Practice: Seminar and Practicum. 3 credits. Pre- or corequisite: Graduate level clinical nursing course. The focus of this course is on the identification and analysis of the professional components of anesthesia practice, related physical, chemical and pharmacological concepts and an introduction to pathophysiological principles applied to problems encountered in the surgical/anesthesia setting. Analysis, integration, and utilization of research findings to improve clinical practice are emphasized.

556. Epidemiology. 3 credits. Prerequisite or Corequisite: Graduate level clinical nursing course. The focus of this course is on the identification and analysis of the professional components of anesthesia practice, related physical, chemical and pharmacological concepts and an introduction to pathophysiological principles applied to problems encountered in the surgical/anesthesia setting. Analysis, integration, and utilization of research findings to improve clinical practice are emphasized.

557. Anesthesia Seminar and Clinical Practicum III. 4 credits. Prerequisites: N517. The course includes a detailed investigation and analysis of anesthetic management of patients with complex co-existing diseases. Exploration and determination of various anesthesia care modalities to optimize patient care and safety are considered. Analysis, integration, and utilization of research to improve practice is emphasized. An extensive clinical experience component is included.
561. Health Administration Practicum and Seminar 6 credits. Pre- or co-requisites: POLS 552, POLS 593 or consent of instructor. The focus of this required graduate course within the Health Administration specialization is on the application of theoretical, research-based, and experiential knowledge related to the administration of a health care delivery organization or subdivision within the organization.

565. Teaching Practicum and Seminar 3 credits. Pre- or co-requisite: Graduate level clinical nursing course. This course focuses on educational concepts and strategies pertinent to education in nursing.

570. Epistemology and Philosophy of Nursing 3 credits. Prerequisite: Admission to the doctoral program or consent of instructor. The origins of nursing knowledge, its structure and methods, the philosophy of nursing as an art and a science, and the criteria for validating nursing's knowledge claims are explored. Patterns of knowing as well as clinical, conceptual, and empirical types of nursing knowledge will also be discussed.

571. Theoretical Development in Nursing 3 credits. Prerequisite: Admission to the doctoral program or consent of instructor. Examination of the knowledge and skills to begin developing theory that contributes to the body of nursing science. Students will study concept development strategies foundational to theory construction and examine and critique ways in which nursing theories have been developed. Concept and theory development strategies are applied by examining phenomena relevant to nursing science and the student's interests.

574. Quantitative Nursing Methods 3 credits. Prerequisite: Admission to the doctoral program or consent of instructor. The underlying purpose of this course is to provide learning experiences which give advanced practice nurses opportunities to acquire knowledge and the skills necessary to apply substantive research methods in nursing. The course features presentations on creative and substantive applications of established methodologies and effective research techniques and strategies within the quantitative paradigm.

575. Qualitative Research Methods in Nursing 3 credits. Prerequisite: Admission to the doctoral program or consent of instructor. Examination and analysis of qualitative research designs with particular emphasis on approaches relevant to problems in nursing or other health-related fields. Students will carry out a qualitative research project.

576. Ethical and Policy Issues 3 credits. Prerequisite: Admission to doctoral program or consent of instructor. Students will study ethical and health policy issues developed at the master's level, concentrating on the various perspectives of persons and groups as they influence the ethical and health policy issues of diverse and vulnerable populations. Students will evaluate how nursing ethics are applied in interdisciplinary decision-making models and consider the appropriateness of selected ethical principles and implemented health policies.

578. Doctoral Seminar 1 credit, may be repeated for up to 2 credits. Prerequisite: Admission to the doctoral program or consent of instructor. The class focus is on discussion and peer critiques of students' research proposals. Students develop and submit a pre-doctoral research fellowship proposal. The course is required of all doctoral students in nursing.

579. Seminar in Nursing 1 credit, may be repeated for up to 4 credits. Prerequisite: Advancement to doctoral candidacy. A series of presentations and discussions of ongoing original research, literature reviews, and current issues in nursing is presented in a seminar format.

586. Advanced Health Assessment Across the Lifespan 3 credits. Prerequisite: Completion of an undergraduate course in health assessment techniques and NUR 510 or its equivalent or consent of instructor. A theory and research-based approach will be used to present methodologies for graduate student performance of health histories, developmental assessments, and physical/psychological assessments of individuals across the lifespan. Communication and interviewing techniques for advanced nursing practice are applied. A clinical/laboratory component is included.

587. Introduction to Computer Technology in Advanced Practice Settings 1 credit. Prerequisite: Admission to Family Nurse Practitioner Specialization. This course is an overview of electronic information related to nurse practitioners. The focus of the course is the use of computer and associated technology-based health applications to support clinical and educational decision making.

590. Directed Studies 1 to 3 credits. Prerequisite: Consent of instructor. Designed to meet the needs of individual and/or small groups of graduate students. The course content will be based on student interests and needs in conjunction with the faculty member's area of specialization.

591. Readings in Nursing 1 to 3 credits. Prerequisite: Consent of instructor. Readings in selected nursing/health care topics with written and/or oral reports.

597. Advanced Clinical Practicum 1 to 12 credits/repeatable to 32. This clinical practicum course provides the student with the opportunity to obtain extended clinical experience in the area of specialization. The course focuses on the integration of theoretical knowledge into clinical practice. S/U grading only.

996. Continuing Enrollment 1-12 credits.

997. Independent Study (non-thesis) 2 credits.

998. Thesis 4 credits.

Occupational Therapy
S. McIntyre (Chair), Atkinson, Bass, Byram, Fox (Graduate Director), Stube and Zimmerman

The Occupational Therapy Department offers a five and a half-year entry-level Master of Occupational Therapy (MOT) degree. Occupational Therapy as a profession is based on the belief that purposeful activity (occupation), including its interpersonal and environmental components, may be used to prevent and mediate dysfunction and elicit maximum adaptation. For information regarding the program, the web site is: http://www.med.umd.nodak.edu/dept/ot/home.htm.

The Occupational Therapy program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE). For information regarding accreditation, contact the ACOTE at (301) 652-2682, or 4720 Montgomery Lane, PO Box 31220, Bethesda, Maryland 20824-1220. All basic professional programs must comply with the Standards for an Accredited Educational Program for the Occupational Therapist. 1998. Graduates of the program will be able to sit for the national entry-level certification examination for the occupational therapist administered by the National Board for Certification in Occupational Therapy, Inc. (NBCOT, 800 South Frederick Avenue, Suite 200, Gaithersburg, MD 20877-4150; phone 301-990-7979). After successful completion of this examination, the graduate will be an Occupational Therapist Registered (OTR). Many states require licensure in order to practice; however, state licenses may be based on the results of the NBCOT certification examination.

The department will provide reasonable accommodation to qualified students with disabilities (see Disability Support Services in this catalog or go online at: http://www.umd.edu/depts/dss for the accommodation process.)

A satellite professional level MOT program is available at Casper College, Casper, WY. Tuition and other information regarding the program is available by contacting the Occupational Therapy Department at Casper College, Casper, WY, telephone 307-268-2541, or 4720 Montgomery Lane, PO Box 31220, Bethesda, Maryland 20824-1220.

Admission Information

As members of a health profession, occupational therapists have a responsibility to the consumer, to the employing agency/institution, to the community, and to society. Personal qualities such as honesty, responsibility, initiative, adaptability, communication skills, ability to function under stress, and self-confidence are essential. Good work habits, attention to detail, punctuality, attendance, and ability to follow directions (both written and oral) are important. Responsibility for one’s own actions is essential - making a decision and abiding by it. The occupational therapy student is expected to assume the responsibility for his/her own learning.

In considering occupational therapy as a career, applicants are advised to consider:

1. Their goals in life, the lifestyle they wish to achieve, and the continuing education and life-long learning required to maintain competency.

2. The physical, emotional, intellectual, social, and economic requirements of the entry-level master’s program.

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2. The physical, emotional, intellectual, social, and economic requirements of the entry-level master’s program.
Admission Requirements

The criteria for admission to the professional program in occupational therapy are based upon the stated competencies and reflect the philosophy and purpose of the program. Acceptance is on a competitive basis with consideration given to pre-professional performance in the sciences, general education requirements, leadership potential, volunteer work and personal qualifications. Each applicant is reviewed including academic record (must have minimum overall GPA of 2.75 on a 4-point scale), volunteer work experience, references, paper and a personal interview.

During the admissions procedure, students' academic records are reviewed for:
1. Total grade point average (minimum GPA 2.75/UND grade point average
2. Science grade point average
3. Pattern of withdrawals, incompletes, etc.
4. Elective courses reflecting individual interest and development

Admission packets are available early November of each year. Please go to our web site: http://www.med.und.nodak.edu/depts/ot/adm/pkg1.htm.

Admission to Graduate School Year III

Professional Program

Acceptance to the Graduate School requires:
1. Acceptance into the professional Occupational Therapy program
2. Successful completion of professional OT Program Year I and II.
3. Completion of the Graduate School application forms
4. Letter of endorsement from the Chair of Occupational Therapy which assures automatic advancement in status from the undergraduate program to the graduate program.

Graduate Student Status

1. To maintain graduate student status, the professional level Year III student is required to maintain a GPA of at least 3.0 for all work completed in Year III.

Pre-Professional Curriculum in OT

The following courses are required to be taken prior to starting the Professional Occupational Therapy Program:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psych 110</td>
<td>Abnormal Psychology</td>
</tr>
<tr>
<td>Psych 270</td>
<td>Abnormal Psychology</td>
</tr>
<tr>
<td>Biol 150/150L</td>
<td>General Biology (laboratory)</td>
</tr>
<tr>
<td>Chem 115/115L</td>
<td>General Chemistry (laboratory)</td>
</tr>
<tr>
<td>Math 103 or 104</td>
<td>College Algebra or Finite Mathematics</td>
</tr>
<tr>
<td>Anat 204</td>
<td>Anatomy for Paramedical Personnel</td>
</tr>
<tr>
<td>Soc 110</td>
<td>Introduction to Sociology</td>
</tr>
<tr>
<td>Phy 301</td>
<td>Mechanics of Human Physiology</td>
</tr>
<tr>
<td>OT 200</td>
<td>Introduction to Occupational Therapy</td>
</tr>
<tr>
<td>OT 205</td>
<td>Medical Terminology</td>
</tr>
<tr>
<td>Arts and Humanities Elective*</td>
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</tbody>
</table>

*When completing your Arts and Humanities courses, it is required by the University of North Dakota that at least one course (3 credits) fulfill the World Cultures requirement. For more information, see the Undergraduate Academic Information section of this catalog.

**As a prerequisite for Pyc 241, student needs to take Math 103 or 104.

MOT Curriculum Sequence

PROFESSIONAL YEAR 1

Summer Session

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>OT 422</td>
<td>Anatomy for Occupational Therapy</td>
</tr>
<tr>
<td>OT 426</td>
<td>Personal/Professional Development</td>
</tr>
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Total credits: 6

Fall Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>OT 423</td>
<td>Fundamentals of Neuroscience for OT</td>
</tr>
<tr>
<td>OT 425</td>
<td>Occupational Therapy with Infants and Pre-School Children</td>
</tr>
<tr>
<td>OT 427</td>
<td>Orientation to Occupational Therapy Theory</td>
</tr>
<tr>
<td>OT 428</td>
<td>Quantitative Research Methods for OT</td>
</tr>
<tr>
<td>OT 431</td>
<td>Medical Sciences I</td>
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</table>

Total credits: 15

Spring Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>OT 424</td>
<td>Muscle Function in Health and Disease</td>
</tr>
<tr>
<td>OT 429</td>
<td>Occupational Therapy with School Age Children and Young Adults</td>
</tr>
<tr>
<td>OT 430</td>
<td>Psychosocial Aspects of Occupational Therapy for Children, Adolescents and Young Adults</td>
</tr>
<tr>
<td>OT 432</td>
<td>Medical Sciences II</td>
</tr>
<tr>
<td>OT 433</td>
<td>Group Leadership Skills in Occupational Therapy</td>
</tr>
<tr>
<td>OT 438</td>
<td>Practicum: Children &amp; Adolescents</td>
</tr>
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Total credits: 18

PROFESSIONAL YEAR 2

Summer Session (Elective Only)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>OT 488</td>
<td>Elective Fieldwork in Occupational Therapy</td>
</tr>
<tr>
<td>OT 497</td>
<td>Cooperative Education: Occupational Therapy</td>
</tr>
<tr>
<td>OT 593</td>
<td>Teaching Experience in OT</td>
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</table>

Total credits: 14

Schedule A

Fall Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>OT 454</td>
<td>Gerontic Occupational Therapy</td>
</tr>
<tr>
<td>OT 456</td>
<td>Psychosocial Aspects of OT with the Maturing Adult</td>
</tr>
<tr>
<td>OT 457</td>
<td>Practicum: Psychosocial Dysfunction</td>
</tr>
<tr>
<td>OT 457SS</td>
<td>Seminar: Practicum Integration I</td>
</tr>
<tr>
<td>OT 458</td>
<td>Qualitative Research Methods for OT</td>
</tr>
<tr>
<td>OT 460</td>
<td>Introduction to Management and Leadership</td>
</tr>
<tr>
<td>OT 490</td>
<td>Occupational Therapy Seminar</td>
</tr>
</tbody>
</table>

Total credits: 15

Spring Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>OT 451</td>
<td>Multicultural Competency in OT</td>
</tr>
<tr>
<td>OT 452</td>
<td>Assistive Technology I</td>
</tr>
<tr>
<td>OT 453</td>
<td>Physical Aspects of OT with the Maturing Adult</td>
</tr>
<tr>
<td>OT 455</td>
<td>Practicum: Physical Dysfunction</td>
</tr>
<tr>
<td>OT 455S</td>
<td>Seminar: Practicum Integration II</td>
</tr>
<tr>
<td>OT 461</td>
<td>Management in the U.S. Healthcare System</td>
</tr>
<tr>
<td>OT 494</td>
<td>Directed Study in Occupational Therapy</td>
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Total credits: 16

Schedule B

Fall Semester

<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>OT 452</td>
<td>Assistive Technology I</td>
</tr>
<tr>
<td>OT 453</td>
<td>Physical Aspects of OT with the Maturing Adult</td>
</tr>
<tr>
<td>OT 455</td>
<td>Practicum: Physical Dysfunction</td>
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<tr>
<td>OT 455S</td>
<td>Seminar: Practicum Integration II</td>
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<tr>
<td>OT 458</td>
<td>Qualitative Research Methods for OT</td>
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<tr>
<td>OT 460</td>
<td>Introduction to Management and Leadership</td>
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Total credits: 16

Schedule C
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<tbody>
<tr>
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### Spring Semester

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<tr>
<td>OT 451</td>
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<td>Directed Study in Occupational Therapy</td>
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<td>OT 454</td>
<td>Gerontic Occupational Therapy</td>
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<td>OT 456</td>
<td>Psychosocial Aspects of OT with the Maturing Adult</td>
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### Fall and Spring Semester Electives:

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<th>Credits</th>
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<tbody>
<tr>
<td>OT 489</td>
<td>Independent Projects</td>
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<tr>
<td>OT 493</td>
<td>Workshop/OT</td>
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<tr>
<td>OT 496</td>
<td>Community Experience in OT</td>
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<td>OT 500</td>
<td>Cooperative Education: OT</td>
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<tr>
<td>OT 593</td>
<td>Teaching Experience in OT</td>
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### Professional Year 3 - Graduate School - Schedule A

#### Summer Session

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>OT 585</td>
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<td>9</td>
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<td>or</td>
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#### Fall Semester

### Assistive Technology Track:

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<tr>
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<th>Course Title</th>
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<tbody>
<tr>
<td>OT 504</td>
<td>Occupation and Vocation</td>
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<tr>
<td>OT 507</td>
<td>Innovative Management and Leadership</td>
<td>3</td>
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<tr>
<td>OT 515</td>
<td>Integration of OT Theory</td>
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<td>OT 502</td>
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### Community Practice Track:

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<tbody>
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<tr>
<td>OT 507</td>
<td>Innovative Management and Leadership</td>
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<td>OT 515</td>
<td>Integration of OT Theory</td>
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### Administration/Management Track:

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<tbody>
<tr>
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<tr>
<td>OT 507</td>
<td>Innovative Management and Leadership</td>
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<td>3</td>
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<td>OT 509</td>
<td>Principles of Education in OT</td>
<td>2</td>
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<td>OT 511</td>
<td>Service Delivery Systems</td>
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### Spring Semester Electives:

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<tbody>
<tr>
<td>OT 493</td>
<td>Workshop/OT</td>
<td>1-12</td>
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<tr>
<td>OT 508</td>
<td>Therapeutic Procedures &amp; Modalities in OT</td>
<td>2</td>
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<tr>
<td>OT 510</td>
<td>Advanced Anatomy and Clinical Kinesiology</td>
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<tr>
<td>OT 512</td>
<td>Advanced Neuroscience</td>
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<tr>
<td>OT 582</td>
<td>Graduate Practicum</td>
<td>1-3</td>
</tr>
<tr>
<td>OT 589</td>
<td>Readings in OT</td>
<td>1-2</td>
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<tr>
<td>OT 593</td>
<td>Teaching in OT</td>
<td>1-3</td>
</tr>
<tr>
<td>OT 599</td>
<td>Special Topics in OT</td>
<td>1-2</td>
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### Spring Semester

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>OT 585</td>
<td>Fieldwork in Psychosocial Dysfunction</td>
<td>9</td>
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<td>OT 995</td>
<td>Scholarly Project in OT</td>
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### Administration/Management Track:

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### PROFESSIONAL YEAR 3 - Graduate School - Schedule B

#### Summer Session

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<th>Course Code</th>
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<tbody>
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<td>or</td>
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#### Fall Semester

### Assistive Technology Track:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>OT 504</td>
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<td>3</td>
</tr>
<tr>
<td>OT 507</td>
<td>Innovative Management and Leadership</td>
<td>3</td>
</tr>
<tr>
<td>OT 515</td>
<td>Integration of OT Theory</td>
<td>3</td>
</tr>
<tr>
<td>OT 502</td>
<td>Assistive Technology II</td>
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<tr>
<td>Electives</td>
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### Community Practice Track:

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<tbody>
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<td>Innovative Management and Leadership</td>
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<td>OT 515</td>
<td>Integration of OT Theory</td>
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</tr>
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<td>OT 506</td>
<td>Community-based OT Practice</td>
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<td>OT 509</td>
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<td>OT 511</td>
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### Spring Semester Electives:

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<tr>
<td>OT 599</td>
<td>Special Topics in OT</td>
<td>1-2</td>
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### Courses

- **208. Introduction to Occupational Therapy**: 2 credits. Prerequisites: Anatomy 204, Psychology 251, and Departmental Major. History, scope, objectives, and functions of Occupational Therapy. F, S
- **420. Medical Terminology**: 1 credit. Knowledge of medical terminology. F, S
- **422. Anatomy for Occupational Therapy**: 5 credits. Detailed study of human anatomy, with an emphasis on skeletal muscle, its vasculature, and the peripheral nervous system. The laboratory portion of the course allows for a direct study of the human form through dissection of human cadavers. SS
- **423. Fundamentals of Neuroscience for Occupational Therapy**: 3 credits. Survey of the major theories of behavior, cognition, and neurological disorders based on experimental findings in neuroanatomy, neurophysiology, and neurology. Laboratory included. F
- **424. Muscle Function in Health and Disease**: 4 credits. The study of musculature acting on the extremities and trunk. Theory and techniques of muscular-skeletal evaluation with analysis of normal and pathological human motion. Laboratory included. S
425. Occupational Therapy with Infants & Pre-School Children: 4 credits. Normal and abnormal human development, conception through the pre-school years. Emphasis on reflexes, sensory systems, neurodevelopmental systems, illness and trauma, assessment procedures, treatment techniques, families and intervention teams, and treatment outcomes. Laboratory included. F

426. Personal/Professional Development: 1 credit. Promote self-awareness and interpersonal communication skills including basic listening skills, ability to provide meaningful feedback, and appropriate group membership skills. SS

427. Orientation to Occupational Therapy Theory: 3 credits. Orientation to human occupation, occupational performance assessment, theoretical practice models, and core processes in occupational therapy. F

428. Quantitative Research Methods for Occupational Therapy: 3 credits. Design and implementation of quantitative research, evaluation of quantitative research studies, the interpretation of statistics as applied to occupational therapy, and the process of presentation and publication of quantitative research projects. Laboratory included. F

429. Occupational Therapy with School Age Children & Young Adults: 4 credits. Normal and abnormal human development, conception through young adulthood. Emphasis on assessment, intervention planning and program outcomes for individuals with disabilities in a variety of practice settings including school, community, and clinical. Laboratory included. F

430. Psychosocial Aspects of OT for Children, Adolescents & Young Adults: 4 credits. Psychosocial development and interventions to develop and support children, adolescents, and young adults, with emphasis on OT evaluation, treatment planning and implementation, and treatment outcomes. Laboratory included. S

431. Group Leadership Skills in Occupational Therapy: 2 credits. Didactic and experiential learning in a small group setting. Provides students with opportunities to function as group facilitators in a variety of practice settings. S

432. Seminar: Children & Adolescents: 1 credit. Observation and experience in a university-approved pediatric and/or adolescent facility; supervised by occupational therapists, educators, and allied health professionals. S

451. Multicultural Competency in OT: 2 credits. Develop an understanding of and an appreciation for cultural and ethnic diversity. Introduction to the major concepts of cultural diversity and ethnicity within the context of providing OT services. F

452. Assistive Technology I: 3 credits. Introductory study of assistive technology devices and products, assessment, and application methods focuses on adaptations, modifications, and technology systems and services that assist individuals with disabilities in greater independence and accessibility across the lifespan. Laboratory included. F, S

453. Physical Aspects of OT with the Maturing Adult: 5 credits. Study of the OT process as applied to physical dysfunction of the maturing adult. Emphasis on OT evaluation, planning, implementation of treatment, and treatment outcomes. Laboratory included. F, S

454. Gerontic Occupational Therapy: 2 credits. Occupational perspectives of the elderly and age-related changes, assessment and intervention strategies and the role of occupational therapy in prevention and wellness programs. Laboratory included. F, S

455. Practicum: Physical Dysfunction: 2 credits. Observation and experience in facilities supervised by registered occupational therapists, qualified health professionals and university faculty. The student begins to integrate and synthesize the theoretical knowledge of psychosocial functioning/dysfunction with clinical practice skills. F

457. Practicum: Psychosocial Dysfunction: 2 credits. Occupational therapy experience in mental health facilities/sheilded, supervised by registered occupational therapists, qualified health professionals and university faculty. The student begins to integrate and synthesize the theoretical knowledge of psychosocial functioning/dysfunction with clinical practice skills. F

477. Seminar: Practicum Integration I: 1 credit. Integration of didactic information with Level I clinical practice in the area of physical dysfunction. It provides additional information related to documentation and introduces specialty areas according to current trends in physical disabilities practice. F, S

489. Elective Fieldwork in Occupational Therapy: 3 credits. Application of occupational therapy in evaluation and treatment in optional areas of student special interest in selected fieldwork facilities. One to three months full-time. F, S, SS

490. Occupational Therapy Seminar I: 1 credit. Foundational knowledge relevant to the preparation of an independent study proposal. Serves as the basis for OT 494: Directed Study in Occupational Therapy. F

493. Workshop/Occupational Therapy: 1-12 credits, repeatable to 12 credits. A workshop course with topics dictated by faculty and student interests primarily for but not confined to continuing education. On demand.

494. Directed Study in Occupational Therapy: 1 credit. Development of the proposal in an area of interest to the student with approval of a supervising faculty member. Elective for OT 490 students. SS

498. Elective Fieldwork in Occupational Therapy: 3 credits. Application of occupational therapy in evaluation and treatment in optional areas of student special interest in selected fieldwork facilities. One to three months full-time. F, S, SS

501. Multicultural Competency in OT: 2 credits. Develop an understanding of and an appreciation for cultural and ethnic diversity. Introduction to the major concepts of cultural diversity and ethnicity within the context of providing OT services. F

504. Innovative Management & Leadership: 3 credits. Develop and demonstrate an understanding of the skills necessary to plan, implement and evaluate programs and materials for educational, consultation and private practice. F, S

506. Community-based Occupational Therapy Practice: 3 credits. Community practice in occupational therapy including theoretical frameworks, legislation/policy issues, program development and the various settings in which this practice occurs. F

510. Advanced Anatomy and Clinical Kinesiology: 3 credits. Advanced course in assistive technology for individuals with disabilities across contexts. Laboratory included. Enrollment in one of OT 512 fieldwork required. S

511. Service Delivery Systems: 2 credits. The process of designing and evaluating service delivery systems and programs. Introduction to the types, purposes and methods of evaluation and outcomes. Data collection and analysis methods appropriate for evaluation of systems/programs. Results in an evaluation study proposal. Laboratory included. F, S

512. Advanced Neuroscience Topics for OT: 2 credits. Detailed study of neuroscience and theoretical perspectives as related to occupational therapy practice. F

515. Integration of Occupational Therapy Theory: 3 credits. Analysis and applications of theoretical perspectives to occupational therapy process with individuals, groups, and service delivery systems. F

518. Directed Practicum: 3 credits, repeatable to 12 credits. Supervised experience in a variety of OT practice settings. Students are afforded the opportunity to gain practical, on-the-job experience working in an area that matches the focus of their graduate study. Students will be supervised by on-site personnel. One credit hour required as a prerequisite for OT 502; additional hours optional. F, S, SS

519. Advanced Anatomy and Clinical Kinesiology: 2 credits. Detailed study of anatomy and kinesiology applied to OT practice. S


522. Graduate Practicum: 3 credits, repeatable to 12 credits. Supervised experience in a variety of OT practice settings. Students are afforded the opportunity to gain practical, on-the-job experience working in an area that matches the focus of their graduate study. Students will be supervised by on-site personnel. One credit hour required as a prerequisite for OT 502; additional hours optional. F, S, SS

523. Teaching Experience in OT: 1-3 credits, repeatable to 12 credits. Supervised experience in higher education teaching in OT. Projects in course/curriculum development, writing course objectives, writing and delivering lectures and learning activities, and developing assessment tools for the classroom. F, S, SS

529. Special Topics in Occupational Therapy: 1-2 credits, repeatable to 6 credits. A series of lectures, discussions and/or laboratory experiences developed around one or more specific topics in occupational therapy. F, S, SS
Pharmacology, Physiology, and Therapeutics

Benoit, Borg, Brown-Borg (Graduate Director), Combs, Doze, Ebadi, Haselton, McCleary, Murphy, Picklo, Porter and Vari

Program Description

The goal of the Department of Pharmacology, Physiology and Therapeutics graduate program is the development and training of students to excel as independent scientists and educators in the study of medically relevant problems in pharmacology and physiology. Pharmacology is the study of therapeutic agent interactions with biological systems. Physiology is the study of the basic processes underlying the functioning of an organism. Our graduate program provides coursework and research opportunities leading to the M.S. and Ph.D. with specialty tracks in pharmacology and physiology. The research interests of our faculty cover a wide range of topics including aging, neurodegenerative disease, neurotoxicology, synaptic transmission, lipid metabolism, cardiovascular physiology, renal physiology, molecular pharmacology and cancer biology.

Graduate students are expected to complete core and elective courses, participate in seminars, complete a research project leading to a thesis or dissertation, and fulfill a teaching requirement.

Admission Requirements

1. Successful completion of two semesters or equivalent course in general chemistry, and courses in general biology, general physics, and organic chemistry.
2. Undergraduate courses in analytical chemistry, calculus, genetics, physiology, biochemistry and statistics are desirable.
3. Overall undergraduate GPA of at least 3.0.
4. GRE score on the General Test (verbal, quantitative, analytical) that averages in the upper 50th percentile. Presentation of scores from an appropriate Subject Test is desirable.
5. Graduate students may be admitted to either the M.S. program or directly to the Ph.D. program.
6. Students who elect to begin the M.S. program and later decide to pursue the Ph.D. before finishing the M.S. may do so by petitioning the Departmental Faculty. This action requires a GPA in accordance with the current academic catalog.

Degree Requirements

Master of Science

The graduate requirements for a Master of Science in Pharmacology, Physiology and Therapeutics consist of required coursework and research leading to the preparation of a thesis. In addition to the general requirements listed in the Academic Catalog, the following must be completed by all candidates for the M.S. in Pharmacology, Physiology and Therapeutics.

I. Coursework (26-30 credits): A. Cellular and Molecular Foundations of Biomedical Science (BIMD 500, 7 cr.)

B. Basic Biomedical Statistics (BIMD 510, 2 cr.)
C. Seminars in Biomedical Science (BIMD 512/513, 2 cr.)
D. Graduate Medical Pharmacology (PPT 501, 5 cr.)
E. Graduate Medical Physiology (PPT 523, 5 cr.)
F. Physiology of the Nervous System (PPT 502, 2 cr.)
G. Seminar in Pharmacology, Physiology and Therapeutics (PPT 521, 1 cr. for each year prior to graduation)

H. At least 3 credits of electives from the following courses as approved by the Faculty Advisory Committee:
   1. Advanced Pharmacology or Physiology (PPT 503, 3 cr.)
   2. Advanced Renal Physiology (PPT 525, 3 cr.)
   3. Advanced Respiratory Physiology (PPT 526, 3 cr.)
   4. Advanced Neurophysiology (PPT 527, 3 cr.)
   5. Advanced Endocrinology (PPT 528, 3 cr.)
   6. Advanced Cardiovascular Physiology (PPT 529, 3 cr.)
   7. Biochemical and Molecular Mechanisms of Pharmacology (PPT 511, 3 cr.)
   8. Research Techniques (PPT 505, 1-3 cr.)
   9. Advanced Neurochemistry (PPT 530, 3 cr.)
   10. Mechanisms of Neurodegenerative Disorders (PPT 535, 3 cr.)
   11. Molecular Neuropharmacology (PPT 540, 3 cr.)

II. Teaching:

The teaching requirement will be defined by the student’s Faculty Advisory Committee and will include one semester of laboratory teaching, e.g. PPT 301, or the development, presentation, and assessment of lectures related to one educational unit as defined by the instructor of record in a Pharmacology, Physiology and Therapeutics undergraduate course.

III. Research and Thesis (6-20 credits):

The M.S. in Pharmacology, Physiology and Therapeutics requires completion of a thesis based on the results of a research project completed by the graduate student under the guidance of a faculty advisor. The project must represent an original and independent investigation by the student. It is expected that the results of the research will be published in a refereed scientific journal. The thesis prepared by the candidate must be presented and defended before the Faculty Advisory Committee and the Departmental Faculty.

Doctor of Philosophy

The graduate requirements for a Doctor of Philosophy in Pharmacology, Physiology and Therapeutics consist of required coursework and research leading to the preparation of a dissertation. In addition to the general requirements listed in the Academic Catalog, the following must be completed by all candidates for the Ph.D. in Pharmacology, Physiology and Therapeutics.

I. Coursework (36-40 credits):
   A. Cellular and Molecular Foundations of Biomedical Science (BIMD 500, 7 cr.)
   B. Basic Biomedical Statistics (BIMD 510, 2 cr.)
   C. Seminars in Biomedical Science (BIMD 512/513, 2 cr.)
   D. Graduate Medical Pharmacology (PPT 501, 5 cr.)
   E. Graduate Medical Physiology (PPT 523, 5 cr.)
   F. Physiology of the Nervous System (PPT 502, 2 cr.)
   G. Seminar in Pharmacology, Physiology and Therapeutics (PPT 521, 1 cr. for each year prior to graduation)
H. Twelve credits of electives in advanced (500 level and above) courses as approved by the Faculty Advisory Committee, including at least six credits from the following:
1. Advanced Pharmacology or Physiology (PPT 503, 3 cr.)
2. Advanced Renal Physiology (PPT 525, 3 cr.)
3. Advanced Respiratory Physiology (PPT 526, 3 cr.)
4. Advanced Neurophysiology (PPT 527, 3 cr.)
5. Advanced Endocrinology (PPT 528, 3 cr.)
6. Advanced Cardiovascular Physiology (PPT 529, 3 cr.)
7. Biochemical and Molecular Mechanisms of Pharmacology (PPT 511, 3 cr.)
8. Advanced Neurochemistry (PPT 530, 3 cr.)
9. Mechanisms of Neurodegenerative Disorders (PPT 535, 3 cr.)
10. Molecular Neuropharmacology (PPT 540, 3 cr.)

II. Teaching
The teaching requirement will be defined by the student’s Faculty Advisory Committee and will include one semester of laboratory teaching, e.g. PPT 301, or the development, presentation, and assessment of lectures related to one educational unit as defined by the instructor of record in a Pharmacology, Physiology and Therapeutics undergraduate course.

III. Scholarly Tools
Students must complete at least one laboratory research techniques course, e.g., PPT 505, Research Techniques at the graduate level.

IV. Research and Dissertation
The Ph.D. in Pharmacology, Physiology and Therapeutics requires completion of a dissertation based on the results of a research project completed by the graduate student under the guidance of a faculty advisor. The project must represent an original and independent investigation by the student. It is expected that the results of the research will be published in a refereed scientific journal. The dissertation prepared by the candidate must be presented and defended before the Faculty Advisory Committee and the Departmental Faculty.

Courses

BIMD 500. Basic Cellular and Molecular Biology. 7 credits. Prerequisite: A) one year of organic chemistry or B) one semester of organic chemistry and one course in biochemistry or cell biology or C) permission of course director. The focus of this interdepartmental team-taught course will be in areas that are fundamental to all biomedical science graduate programs. Emphasis will be on developing a solid grounding in biochemistry, cell biology and molecular biology with themes covering proteins, metabolism, information flow, vectors, membranes, cell signaling, cell shape and movement, cell growth and division, and immunity.

BIMD 510. Basic Biomedical Statistics. 2 credits. Prerequisites: BIMD 500 or permission of course director. A series of lectures and demonstrations to provide students with the basic techniques for the use of statistics in the assessment of biomedical data and a selected set of the most common and useful statistical tests.

BIMD 512. Seminars in Biomedical Sciences. 1 credit. Prerequisites: BIMD 500 or permission of course director. A series of presentations on original research conducted by UND faculty members as well as extramural leaders in the fields of academic and industrial research in the biomedical sciences. Students will participate through assigned reading and writing exercises related to the presentation.

BIMD 513. Seminars in Biomedical Sciences. 1 credit. Prerequisites: BIMD 512 or permission of course director. A series of presentations on original research conducted by UND faculty members as well as extramural leaders in the fields of academic and industrial research in the biomedical sciences. Students will participate through assigned reading and writing exercises related to the presentation.

BIMD 540. Molecular Neuropharmacology. 3 credits. Prerequisites: BIMD 500 or PPT 523 or consent of instructor. Introductory presentation of basic pharmacology principles including pharmacodynamics, pharmacokinetics, and therapeutics.

BIMD 541. Physiology of the Nervous System. 2 credits. Prerequisite: consent of instructor. Introductory presentation of basic pharmacology principles including pharmacodynamics, pharmacokinetics, and therapeutics.

503. Advanced Pharmacology or Physiology. 3 credits. Prerequisite: PPT 501 and 523 or consent of instructor.

505. Research Techniques. 1-3 credits. Prerequisite: consent of instructor.

511. Biochemical and Molecular Mechanisms of Pharmacology. 3 credits. Prerequisites: BIMD 506, PPT 501, 502, and 523, or consent of instructor. Fundamental concepts of pharmacology with emphasis on biochemical and molecular mechanisms.

512. Special Topics in Pharmacology, Physiology and Therapeutics. 2 credits. Prerequisite: consent of instructor. An in-depth coverage of a particular topic chosen by the instructor.

521. Seminar in Pharmacology, Physiology and Therapeutics. 1 credit.

523. Graduate Medical Physiology. 5 credits. Prerequisite: consent of instructor. Lecture and discussion format. Survey of human physiology with an integrative systems-based approach. Does not include the nervous system (see PPT 502).

525. Advanced Renal Physiology. 3 credits. Prerequisites: PPT 523 or consent of instructor.

526. Advanced Respiratory Physiology. 3 credits. Prerequisites: PPT 523 or consent of instructor.

527. Advanced Neurophysiology. 3 credits. Prerequisites: PPT 523 or consent of instructor.

528. Advanced Endocrinology. 3 credits. Prerequisites: PPT 523 or consent of instructor.

529. Advanced Cardiovascular Physiology. 3 credits. Prerequisites: PPT 523 or consent of instructor.

530. Advanced Neurochemistry. 3 credits. Prerequisites: PPT 502 or consent of instructor. Prerequisite: PPT 502 or consent of instructor. This advanced course is designed for the graduate student who has a background in basic neuroscience. The course is designed as an overview of the more common neurotransmitter disorders and address the “state of the field” for each. The course is an introduction to the latest developments in molecular neuropharmacology. It is intended for graduate students who have a background in pharmacology and/or basic neuroscience. The course is designed to provide an up-to-date foundation for clinical neuroscience by emphasizing the comprehensive molecular and cellular approach in the effects of drugs on the nervous system.

535. Mechanisms of Neurodegenerative Disorders. 3 credits. Prerequisites: PPT 502 or consent of instructor. This advanced course is a new approach to the study of neurodegenerative disorders. The course is designed to provide an in-depth study of the mechanisms of neurodegenerative disorders and their impact on the nervous system.

540. Molecular Neuropharmacology. 3 credits. Prerequisites: BIMD 500 or PPT 501, or PPT 502 or consent of instructor. This advanced course is designed for the graduate student who has a background in pharmacology and/or basic neuroscience. The course is designed as an overview of the more common neurotransmitter disorders and address the “state of the field” for each. The course is an introduction to the latest developments in molecular neuropharmacology. It is intended for graduate students who have a background in pharmacology and/or basic neuroscience. The course is designed to provide an up-to-date foundation for clinical neuroscience by emphasizing the comprehensive molecular and cellular approach in the effects of drugs on the nervous system.

590. Readings in Pharmacology, Physiology and Therapeutics. 1 to 4 credits repeatable to a maximum of 4 credits. Prerequisite: consent of instructor. A supervised reading course on topics of mutual interest to the student and a faculty member. Consent of instructor required.

591. Research in Pharmacology, Physiology and Therapeutics. Credits arranged. Consent of instructor required.


600. Continuing Enrollment. Consent of instructor required.


Physical Education
(See Kinesiology)

Physical Therapy

Professors Jeno, Johnson, Mabee, P. Mohr, T. Mohr, (Chair), Romanick and Wessman

Instructors Danks, Decker, Flom-Meland, Labrecque and Relling

The Department of Physical Therapy offers the clinically-oriented, entry-level Doctor of Physical Therapy (DPT) degree. Students interested in the physical therapy program at UND should stay in contact with UND-PT to keep informed of the pre-professional and professional curriculum. Our web site address is: http://www.medicine.nodak.edu/pt.

Physical therapists provide services to patients who have impairments, functional limitations, and disabilities. Physical therapists assist patients in restoring health; alleviating pain; examining, evaluating, and diagnosing changes in physical function and health status resulting from injury, disease, or other causes. Physical therapists are also involved with intervention, prevention, and the promo-
tion of health, wellness, and fitness. They are employed by hospi-
tals, outpatient clinics, rehabilitation centers, skilled nursing facili-
ties, home care, school systems, industrial settings, athletic facilities,
and in private practice.

Pre-Physical Therapy Requirements

Prior to admission, a minimum of 90 semester hours of credit
from an approved college or university is required. Students should
be broadly educated in the sciences and humanities. The Department
of Physical Therapy recognizes that, since physical therapy deals with
people, an understanding of literature, art, history, ethics, and phi-
losophy is an adjunct to a physical therapist. Science and humanities
are both viewed as necessary for the practice of physical therapy.

The following list of courses and credits indicates the core pre-
requisites all applicants must complete prior to admission to the physi-
tical therapy program. It is strongly recommended that students be
computer literate prior to entering the professional program. Stu-
dents may take additional electives from any field of study; however,
the depth of the pre-physical therapy education should demonstrate
that students have progressed from simple to complex studies in at
least one content area. This requirement might typically be demon-
strated by a discipline major, but in any case should demonstrate a
basic comprehensiveness and integrity of study within a particular
content area. This does not suggest that a separate undergraduate
degree must be awarded; however, the breadth and depth in a disci-
pline should be demonstrated. Course credits equivalent to minor,
.i.e., approximately 20 credits at UND, in a particular discipline could
accomplish this requirement. The prospective student should include
some credits from upper level courses, i.e., 300 and 400 numbers.

- Two semesters of General Biology (8 cr.)
- Two semesters of General Chemistry (8 cr.)
- Two semesters of General Physics (8 cr.)
- One semester of Human Anatomy (3 cr.)
- One semester of Human Physiology (3 to 4 cr.)
- One semester of Introductory Psychology (3 cr.)
- One semester of Developmental Psychology (3 to 4 cr.)
- One semester of Abnormal Psychology (3 cr.)
- One semester of Introductory Sociology (3 cr.)
- One semester of a Public Speaking course (3 cr.)
- Two semesters of English Composition (6 cr.)
- Arts and Humanities coursework (9 cr.)
- World Culture course

All of the prerequisite coursework must be completed before
entering the professional program in the Fall semester. However, the
prospective student may be enrolled in pre-professional coursework
at the time of application. Students must apply for the professional
program. WICHE-eligible students must apply to UND-PT through the
WICHE certification process. Out-of-state student inquiries should
be addressed to the Admissions Coordinator at UND-PT. Applica-
tions for the professional program are available on our website and
from the UND-PT office. Applications must be made no later than
March 1 of the year the student wishes to enter the professional pro-
gram.

Admission Requirements

1. Acceptance is on a competitive basis, with the major de-
terminant being the basic science grade point average. The
basic science GPA is defined as: biology (eight semester
credits), chemistry (eight semester credits), physics (eight
semester credits), anatomy (three semester credits), physi-
ology (four semester credits), and psychology (seven sem-
ester credits).
2. Reference letters, a personal interview, and other personal
qualifications are also considered prior to final acceptance.
Prospective students are expected to complete at least 60
hours of observation prior to admission.
3. Acceptance by the Office of Admissions to UND does not
constitute acceptance into the professional program in
Physical Therapy.

Degree Requirements

1. The professional education component of the D.P.T. will
require three academic years and two summer sessions fol-
lowing completion of the pre-physical therapy entrance
requirements.
2. No student will be allowed to remain in the program or
complete the full-time clinical experiences unless he/she
attains a letter grade of at least C in the major courses.
3. Acceptance into the Graduate School requires:
   a. Acceptance into the professional Physical Therapy
      program.
   b. Successful completion of professional PT education
      year one
   c. Completion of the Graduate School application forms.
   d. Letter of endorsement from the Chair of Physical
      Therapy which assures automatic advancement in
      status from the undergraduate program to the graduate
      program.
4. Students in the professional program should be aware that
there are special requirements for clinical uniforms, pro-
fessional liability insurance, medical insurance, a current
immunization record, and CPR certification. In addition,
some facilities may require a criminal background check.
These requirements must be met prior to any clinical con-
tact with patients. The student will also be responsible for
travel, housing, and food costs, in addition to the payment of
tuition, during the full-time clinical experience semes-
ters. The majority of these experiences will be completed
at geographical locations other than the City of Grand Forks.
5. The faculty reserves the right to place on professional pro-
bation or to cancel the registration of any student in Physi-
cal Therapy whose performance in the classroom or the
clinic is unsatisfactory.

Pre-Physical Therapy

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENGL 110</td>
<td>ENGL 110, 120 or</td>
<td></td>
</tr>
<tr>
<td>125 &amp; COMM 110</td>
<td>Communication..........................</td>
<td>(9)</td>
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<tr>
<td>BIOL 150, 151</td>
<td>Arts and Humanities*..................</td>
<td>(9)</td>
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<tr>
<td>CHEM 121, 122</td>
<td>Introduction to Biology...............</td>
<td>(8)</td>
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<tr>
<td>SOC 110</td>
<td>Gen. Chemistry I, II...................</td>
<td>(8)</td>
</tr>
<tr>
<td>PSY 111</td>
<td>Intro to Sociology (or approved substitute) ......</td>
<td>(3)</td>
</tr>
<tr>
<td>PHYS 161, 162</td>
<td>Intro to Psychology...................</td>
<td>(3)</td>
</tr>
<tr>
<td>ANAT 204</td>
<td>Intro to College Physics...............</td>
<td>(8)</td>
</tr>
<tr>
<td>PHY 301</td>
<td>Anatomy for Paramedical Personnel.....</td>
<td>(3)</td>
</tr>
<tr>
<td>PT 401</td>
<td>Mechanics of Human Physiology........</td>
<td>(4)</td>
</tr>
<tr>
<td>PT 402</td>
<td>Developmental Psychology.............</td>
<td>(4)</td>
</tr>
<tr>
<td>PT 403</td>
<td>Abnormal Psychology..................</td>
<td>(3)</td>
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<tr>
<td>PT 410</td>
<td>Orientation to Physical Therapy.....</td>
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<tr>
<td>Electives</td>
<td>Minimum of 20 with emphasis in a single discipline</td>
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*One course should fulfill the World Culture requirement

Professional Program - Physical Therapy

Professional Year 01 - Fall Semester (17 cr.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>PT 401</td>
<td>Intervention Techniques I..............</td>
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<tr>
<td>PT 402</td>
<td>Professional Communication and Behavior</td>
<td>(2)</td>
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<tr>
<td>PT 409</td>
<td>Clinical Pathology I..................</td>
<td>(4)</td>
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<tr>
<td>PT 422</td>
<td>Anatomy for Physical Therapy..........</td>
<td>(5)</td>
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<tr>
<td>PT 423</td>
<td>Neuroscience for Physical Therapy.....</td>
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Professional Year 01 - Spring Semester (19 cr.)

<table>
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<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PT 410</td>
<td>Clinical Pathology II.................</td>
<td>(3)</td>
</tr>
</tbody>
</table>
**Physical Therapy**

### Professional Year 01 - Summer Session (10 cr.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>PT 412</td>
<td>Biomechanics and Kinesiology</td>
<td>4</td>
</tr>
<tr>
<td>PT 413</td>
<td>Exercise in Health and Disease</td>
<td>3</td>
</tr>
<tr>
<td>PT 415</td>
<td>Motor Control</td>
<td>3</td>
</tr>
<tr>
<td>PT 417</td>
<td>Clinical Examination and Evaluation I</td>
<td>4</td>
</tr>
<tr>
<td>PT 426</td>
<td>Manual Therapy I</td>
<td>2</td>
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</table>

### Professional Year 02 - Fall Semester (19 cr.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PT 520</td>
<td>Clinic I: Clinical Practice</td>
<td>18</td>
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<tr>
<td>PT 521</td>
<td>Critical Inquiry I</td>
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### Professional Year 02 - Spring Semester (17-18 cr.)

<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>PT 522</td>
<td>Administration in Physical Therapy</td>
<td>(3)</td>
</tr>
<tr>
<td>PT 523</td>
<td>Lifespan I</td>
<td>(2)</td>
</tr>
<tr>
<td>PT 524</td>
<td>Psychological Aspects of Disability</td>
<td>(2)</td>
</tr>
<tr>
<td>PT 526</td>
<td>Manual Therapy II</td>
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</tr>
<tr>
<td>PT 527</td>
<td>Critical Inquiry II</td>
<td>(2)</td>
</tr>
<tr>
<td>PT 583</td>
<td>Critical Inquiry III</td>
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<tr>
<td>EFR 515</td>
<td>Statistics I</td>
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### Professional Year 02 - Summer Session (9-10 cr.)

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<tr>
<td>PT 591</td>
<td>Critical Inquiry IV</td>
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<tr>
<td>PT 592</td>
<td>Case Management II</td>
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<tr>
<td>PT 562</td>
<td>Readings: Physical Therapy</td>
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<td>Electives</td>
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### Professional Year 03 - Fall Semester (16-17 cr.)

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PT 511</td>
<td>Applied Movement Science/Rehabilitation Procedures</td>
<td>(4)</td>
</tr>
<tr>
<td>PT 525</td>
<td>Clinical Examination and Evaluation II</td>
<td>(4)</td>
</tr>
<tr>
<td>PT 539</td>
<td>Prevention and Wellness</td>
<td>(3)</td>
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<tr>
<td>PT 535</td>
<td>Lifespan II</td>
<td>(2)</td>
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<tr>
<td>PT 561</td>
<td>Seminar: Physical Therapy</td>
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<tr>
<td>Electives</td>
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<td>(2-3)</td>
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### Professional Year 03 - Spring Semester (19 cr.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PT 552</td>
<td>Clinic II: Clinical Practice</td>
<td>18</td>
</tr>
<tr>
<td>PT 995</td>
<td>Scholarly Project</td>
<td>(1)</td>
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</tbody>
</table>

## Courses


401. Intervention Techniques 1. 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Beginning skills for patient management including skills and safety in positioning, draping, therapeutic massage, surface anatomy, and an introduction to communication techniques. Laboratory.

402. Professional Communication and Behavior 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Lecture and practice in interpersonal and intrapersonal communication including professional behavior, ethics, patient education, scientific writing, and written documentation.

490. Clinical Pathology I 4 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Disease groups discussed from all aspects of comprehensive rehabilitation. Included are chronic illness, neurological and orthopedic conditions, general medicine and surgery, pediatrics, geriatrics, and sensory disabilities.

491. Clinical Pathology II 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Disease groups discussed from all aspects of comprehensive rehabilitation. Included are chronic illness, neurological and orthopedic conditions, general medicine and surgery, pediatrics, geriatrics, and sensory disabilities.


413. Exercise in Health and Disease 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Lecture and laboratory work to examine and maintain/maintain mobility, strength, and endurance for healthy individuals and those with disease, with completion of an exercise prescription to address impairments and functional limitations. Functions of the musculoskeletal, pulmonary, and cardiovascular systems will be addressed individually and within their relationships. Laboratory.

415. Motor Control 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Lecture and laboratory work in therapeutic exercise to establish and maintain musculoskeletal control and coordination, including muscle re-education, facilitation, and relaxation. Laboratory.

417. Clinical Examination and Evaluation I 4 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Emphasizes patient/client management elements of examination and evaluation. Emphasis is given to the muscular-skeletal and neurological systems. Laboratory.

422. Anatomy for Physical Therapy 5 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Detailed lectures and demonstrations on musculoskeletal anatomy and neuroanatomy.

423. Neuroscience for Physical Therapy 4 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Structure and function of human nervous system including clinical application relevant to physical therapy practice.

426. Manual Therapy I 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Introduction to joint mobilization with emphasis on peripheral joint bases. Basic evaluation techniques and exercises for the lumbar and cervical spine. Laboratory.

490. Special Topics 1-4 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Introduction and investigation of advanced clinical procedures and topics. Topics discussed will be dictated by student and faculty interests.

491. Independent Study in Physical Therapy 1-4 credits. Prerequisite: Registration in Professional Physical Therapy Curriculum. Research and independent study in a specialized area of Physical Therapy.

511. Applied Movement Science and Rehabilitation Procedures 4 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Integration of clinical evaluation, functional goals, and treatment planning for individuals with neurological and multiple musculoskeletal dysfunction. The primary focus is on rehabilitation skills including assessment, exercise, handling techniques, functional activity, habilitation, patient education, and ADLs, as well as community mobility and governmental services. Laboratory.

512. Therapeutic Agents 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Theory and application of various hydrotherapy, phototherapy, and thermotherapy modalities in Physical Therapy, including heat, light, sound, and water. Laboratory.

513. Intervention Techniques II 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Theory and practical application of introductory patient care techniques in physical therapy including gait, range of motion, transferring, bandaging, wound care, vital signs, and assistive and isolation techniques. Laboratory.

514. Case Management I 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Case management with integration of examination, evaluation, diagnostic, plan of care, and intervention strategies. Verbal and written communication of results will be emphasized.

519. Electrotherapy and Electrodiagnosis 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Theory and application of therapeutic electrical currents, biofeedback, electromyography, and nerve conduction velocity in physical therapy. Laboratory.

526. Clinical Internship I 18 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Full-time clinical experience in selected physical therapy provider centers throughout the United States.

521. Critical Inquiry I 1 credit. Prerequisite: Registered in Professional Physical Therapy Curriculum. Introduction to the collection of clinical data leading to a case study report.

522. Administration in Physical Therapy 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Lectures/discussion and seminar formats used to explore concepts of administration procedures as applied to Physical Therapy and the health care delivery system.

523. Lifespan I 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Course focus is on rehabilitation issues related to pediatrics including the characteristics of disabling conditions, developmental evaluation and intervention, the use of adaptive equipment, legal issues, and strategies to promote collaborative service provision to children and families. Laboratory.

524. Psychological Aspects of Disability 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Readings and discussion of study of psychological coping mechanisms, reactions, and motivational factors pertinent to the disabled. Review of adjustment problems unique to specific disabilities and/or disease processes, including the terminally ill.

525. Clinical Examination and Evaluation II 4 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Emphasizes patient/client management elements of examination and evaluation. Emphasis is given to systems review and differential diagnosis, clinical decision making resulting in referral and/modified physical therapy interventions, and the communication of findings. Laboratory.
Physician Assistant
Burns (Chair), Larson, Laxen (Program Director) and Wold

Program Description
The School of Medicine & Health Sciences, Department of Family Medicine offers a clinically oriented, rural emphasis terminal degree in Masters in Physician Assistant Studies.

Physician Assistants are health care professionals licensed to practice medicine with physician supervision. They are skilled members of the health care team fulfilling a broad range of medical services that would otherwise be provided by a physician. The program is targeted to prepare a clinically practicing registered nurse who has had extensive experience, to work as a PA within the medical model especially in rural and underserved areas.

The program is accredited by ARC-PA, (Accreditation Review Commission on Education for the Physician Assistant, Inc.).

The MPAS degree is offered through a combination of online courses, on campus study, and extensive clinical experience. The curriculum is designed to prepare clinically competent physician assistant practitioners.

Admission Requirements
Acceptance is on a competitive basis with emphasis on the proven adult learner with clinical experience in primary care nursing.

1. RN with a minimum of 4 years of clinical experience
2. BA or BS degree, not necessarily in nursing
3. Current licensure in nursing
4. A licensed physician (MD or DO) whose practice is in family medicine or internal medicine, in a rural and/or underserved area and is willing to serve as primary clinical preceptor to the student during the entire course of study
5. A proven record of continuing education in areas appropriate to the applicant’s field
6. Current ACLS certification
7. Completion of a successful interview
8. Reference letters, written personal statement and other personal qualifications are also considered prior to final acceptance

Degree Requirements
1. Successful completion of all courses in core curriculum.
2. Completion of a Scholarly Project.

Required Courses
PA 500 Introduction to the PA Role.............................. 3 credits
PA 510 Pathophysiology for the Physician Assistant .... 3 credits
PA 515 Investigative Studies for the Physician Assistant.. 2 credits
PA 520 Methodological Approaches to Health Promotion, Disease Prevention I ........................... 2 credits
PA 525 Methodological Approaches to Health Promotion, Disease Prevention II .......................... 2 credits
PA 530 Methodological Approaches to Health Promotion, Disease Prevention III.................................. 2 credits
PA 540 Primary Care I.................................................4-10 credits
PA 550 Primary Care II.............................................. 4-10 credits
PA 560 Primary Care III............................................ 4-10 credits
PA 565 PA Role ...................................................... 3 credits
PA 580 Specialty Clerkship ................................. 1-4 credits (repeatable to 12) (4 credits required)
PA 585 Current Trends and Issues for the Physician Assistant Practitioner ................................. 2 credits (repeatable to 12)
PA 995 Scholarly Project ............................................ 2-3 credits (3 credits required) 
Total required credits: 38 credits

Elective Courses

PA 588 Third World Preceptorship ................................. 1-4 credits (repeatable to 12)
PA 589 Readings in Physician Assistant Studies .......... 1-3 credits (repeatable to 12)
PA 599 Special Topics in Physician Assistant Studies. 1-3 credits (repeatable to 12)
PA 990 Continuing Education Workshops in Physician Assistant Studies ................................. 1-8 credits

Courses

500. Introduction to the PA Role ............................. 3 credits. Prerequisite: Enrolled in Physician Assistant Program. This on-line course introduces the student to the profession. It reviews the history of the profession, the history of the UND PA Program, the definition, duties, and responsibilities of the PA, and the changes that have occurred for the role transition of as well as PA organizations on both the state and national level. It covers the different techniques of reviewing interview of different age groups in an ethical and cultural background for the purpose of obtaining information for a patient’s medical history. It covers medical terminology needed for accurate recording of that history. It reviews Human Anatomy in preparation for doing a complete physical exam.

510. Pathophysiology for the Physician Assistant .......................... 3 credits. Prerequisite: Enrolled in the Physician Assistant Program. This on-line course covers the pathophysiological function of the human body and its organ systems.

515. Investigative Studies for the Physician Assistant ............................................. 2 credits. Prerequisite: Enrollment in the Physician Assistant Program. This on-line course discusses basic diagnostic tests, including their role in diagnoses and treatment, acceptable normals for individual tests, and interpretations of abnormalities. Components studied include hematology, chemistry, immunology and microbiology.

520. Methodological Approaches to Health Promotion, Disease Prevention I ............................ 2 credits. Prerequisite: Enrollment in Physician Assistant Program. This on-line course prepares the student to understand the public health implications of health promotion and disease prevention; this on-line course introduces fundamental epidemiology and biostatistical concepts as well as emphasizes ways in which these concepts are applied in field studies. Concepts included are derivation of disease rates, study designs, measures of association, sources of mortality and morbidity data, disease screening, and surveillance.

525. Methodological Approaches to Health Promotion, Disease Prevention II ................................ 2 credits. Prerequisite: Enrollment in Physician Assistant Program. This on-line course introduces the student to the methodology needed to critique medical literature as to its validity and appropriateness in providing information and guidelines for patient care. The principles of evidence-based medicine are reviewed and utilized in case studies.

530. Methodological Approaches to Health Promotion, Disease Prevention III ............................ 2 credits. Prerequisite: Enrollment in Physician Assistant Program. This on-line course introduces the student to the methodology needed to critique medical literature as to its validity and appropriateness in providing information and guidelines for patient care. The principles of evidence-based medicine are reviewed and utilized in case studies.

540. Primary Care I ................................. 1-4-10 credits (4 credits required). Prerequisite: Enrolled in the Physician Assistant Program. This course uses the problem solving process to instruct students in the diagnosis and management of acute and emergent conditions seen in the child, adult, elderly, and pregnant women in the primary care setting. The pharmacology portion of this course emphasizes pharmacological preparations used in chronic conditions through teaching the principles of rational drug therapy: selection, initiation, and monitoring, with current information regarding efficacy, toxicity, and the cost of pharmacological agents. Following four weeks of didactic instruction, an extensive clinical practicum of twelve weeks supervised by a physician is required to assist students in the synthesis and application of theoretical and scientific concepts in a primary care setting. (Teaching modalities include lectures, small group discussions, hands-on workshops, required readings, clinical practicums, and written assignments.)

550. Primary Care II ................................. 1-4-10 credits (4 credits required). Prerequisite: Enrollment in the Physician Assistant Program. This course uses the problem solving process to instruct students in the diagnosis and management of chronic conditions seen in the child, adult, elderly, and pregnant women in the primary care setting. The pharmacology portion of this course emphasizes pharmacological preparations used in chronic conditions through teaching the principles of rational drug therapy: selection, initiation, and monitoring, with current information regarding efficacy, toxicity, and the cost of pharmacological agents. Following four weeks of didactic instruction, an extensive clinical practicum of twelve weeks supervised by a physician is required to assist students in the synthesis and application of theoretical and scientific concepts in a primary care setting. (Teaching modalities include lectures, small group discussions, hands-on workshops, required readings, clinical practicums, and written assignments.)

560. Primary Care III ............................... 1-4-10 credits (4 credits required). Prerequisite: Enrollment in the Physician Assistant Program. This course uses the problem solving process to instruct students in the diagnosis and management of chronic conditions seen in the child, adult, elderly, and pregnant women in the primary care setting. The pharmacology portion of this course emphasizes pharmacological preparations used in chronic conditions through teaching the principles of rational drug therapy: selection, initiation, and monitoring, with current information regarding efficacy, toxicity, and the cost of pharmacological agents. Following four weeks of didactic instruction, an extensive clinical practicum of twelve weeks supervised by a physician is required to assist students in the synthesis and application of theoretical and scientific concepts in a primary care setting. (Teaching modalities include lectures, small group discussions, hands-on workshops, required readings, clinical practicums, and written assignments.)

565. PA Role ............................. 3 credits. Prerequisites: Enrolled in Physician Assistant Program. This on-line course introduces the PA student to a more complete role definition in various sectors of the health care industry. It also introduces the PA student to his/her professional liabilities, credentialing and licensure, malpractice insurance, and the continuing discussion of the ethical standards within the profession, including the concepts of privilege, confidentiality, and informed consent. It also explores various ethical and cultural issues encountered within the health care systems of the United States. It prepares the student for transition from PA-S to PA-C including role expectations, national certification and recertification, licensure, ethical issues in patient care, the impaired professional, leadership within the profession, and the lifelong learner.

580. Specialty Clerkship .................................... 1-4 credits, repeatable to 12. Prerequisite: Enrollment in the Physician Assistant Program. This on-line course covers the following areas: ethics and life issues, risk management, quality assurance, coding, health care models in the U.S., and basic practice management.

584. Third World Preceptorship .................................... 1-4 credits, repeatable to 12. Prerequisite: Approval of the Director of the Physician Assistant Program. This course offers students clinical time in a third world country to become acquainted with problems in: health care delivery, mother and child care; malnutrition, basic sanitation, and preventative health care measures. Offered on demand.

585. Readings in Physician Assistant Studies .................................... 1-3 credits, repeatable to 12. Prerequisite: Approval of the Director of the Physician Assistant Program. This course offers students clinical time in a third world country to become acquainted with problems in: health care delivery, mother and child care; malnutrition, basic sanitation, and preventative health care measures. Offered on demand.

599. Special Topics in Physician Assistant Studies .................................... 1-3 credits, repeatable to 12. Prerequisite: Approval of the Director of the Physician Assistant Program. This course offers students clinical time in a third world country to become acquainted with problems in: health care delivery, mother and child care; malnutrition, basic sanitation, and preventative health care measures. Offered on demand.

990. Continuing Education Workshops in Physician Assistant Studies .................................... 1-8 credits. Prerequisite: Approval of the Director of the Physician Assistant Program. Clinically relevant lectures, discussions, and/or clinical experiences that are varied and dictated by student and faculty interests. Offered on demand.

995. Scholarly Project .................................... 2-3 credits (3 credits required). Prerequisite: Enrollment in the Physician Assistant Program. The scholarly project requires the student to investigate a topic related to an area of interest within primary care and/or the PA profession. This can be done individually or in groups. Before initiating the project, the student must obtain approval from designated faculty.
Degree Requirements

Master of Science

The program is designed to provide the student with basic physics courses at the graduate level and an introduction to research.

1. Successfully completed a basic core of courses which includes: classical mechanics, quantum mechanics, methods of theoretical physics, classical electricity and magnetism.

2. Completion of a research project and thesis.

Doctor of Philosophy

The degree is a research degree and is conferred only in recognition of high achievement in independent scientific research and scholarship.

1. In addition to Physics 590, Research, the coursework will amount to approximately 36 hours.

2. Completion of a regular core of courses which includes: PHYS 509 and 510, Methods of Theoretical Physics PHYS 539 and 540, Quantum Mechanics PHYS 541 and 542, Theory of Electricity and Magnetism PHYS 543, Statistical Physics PHYS 545, Analytical Mechanics PHYS 549, Seminar

3. Completion of several specialized graduate level courses in physics in order to obtain the in-depth training essential for the development of their research interests.

4. Completion of at least nine semester hours of graduate work (400 level or above) in a single related field.

5. After successful completion of the first two semesters of coursework, students who entered the program with a bachelor’s degree will take a written qualifying examination which covers undergraduate and first-year graduate level courses. Students with a master’s degree will take this examination in the second semester of enrollment.

6. A student who fails to perform satisfactorily in this examination may be re-examined after waiting one semester. In general, no student will be allowed to take the qualifying examination more than twice.

7. No student may proceed formally toward the Ph.D. degree until this examination has been passed.

8. Written doctoral comprehensive examination in physics will normally be taken in the fifth semester of graduate enrollment. This must be completed before advancement to candidacy is granted.

9. Candidates for the Ph.D. must complete a research investigation. Upon satisfactory completion of the research investigation, the student is required to prepare a dissertation covering the research.

10. At the final oral examination, the candidate presents and defends the dissertation.

Courses

509. Methods of Theoretical Physics. 3 credits. 3 hours per week. An introduction to the mathematical methods customarily used in physics.

510. Method of Theoretical Physics. 3 credits. 3 hours per week. A continuation of Physics 509.

535. Solid State Physics. 3 credits. 3 hours per week. The crystal lattice, electron theory of metals and semiconductors, and transport phenomena in solids.

536. Solid State Physics. 3 credits. 3 hours per week. Lattice vibrations, phonon-electron interactions, and cooperative phenomena in solids.

539. Quantum Mechanics. 3 credits. 3 hours per week. The Schroedinger equation, perturbation methods, and simple quantum mechanical systems.

540. Quantum Mechanics. 3 credits. 3 hours per week. Matrix methods, spin, and scattering phenomena.

541. Theory of Electricity and Magnetism. 3 credits. 3 hours per week. Electrostatics, magnetostatics, electromagnetic waves.

542. Theory of Electricity and Magnetism. 3 credits. 3 hours per week. Special theory of relativity, scattering of charged particles, and radiation.

543. Statistical Physics. 3 credits. 3 hours per week. The Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics, and their application to the description of physical systems.

545. Analytical Mechanics. 3 credits. 3 hours per week. Variational methods. Lagrange’s equations, oscillations, Hamilton equations, and special relativity.

549. Seminar. 1 credit. Repeatable to maximum of 3 credits.

550. Special Topics. 1 to 3 credits. Prerequisites: Consent of department. Investigation of special topics in advanced physics; the subject matter determined by student-faculty interest. May be repeated to a total of 6 credits.

596. Research. Credit arranged.

425. Modern Physics Laboratory. 2 credits.

431. Introductory Quantum Physics. 3 credits.

434. Nuclear Physics. 3 credits.

437. Introductory Solid State Physics. 3 credits.

460. Introduction to Astrophysics. 3 credits.

496. Special Problems. 1 to 3 credits.

Psychology

Professors Antes, Bennett, Ferraro, Grabe, Holm, King, McDonald, Peters, Peters, Terrance, Tyler, Weatherly (Chair) and Wenzel

Program Description

The master’s degree in Psychology is given only in General Psychology. The Ph.D. degree is given upon further specialization in the areas of General, Experimental or Clinical Psychology. The Clinical Psychology program is accredited by the American Psychological Association.

Admission Requirements

1. Eighteen (18) hours of undergraduate work in psychology including a course in General Psychology, Developmental, Abnormal, Statistics, and Experimental Psychology.

2. A year of biological science (biology, physiology, etc.).

3. A semester of college algebra.

4. General background in other social and natural sciences also recommended.

5. Graduate Record Examination—General and Subject. Applications must be complete by February 1.

Degree Requirements

1. Scholarly Tool for the Ph.D.—directed toward developing skills in the area of measurement, design, and analysis. Normally in courses Psychology 541, 542, and 543.

2. Clinical Psych—one calendar year full time internship, ordinarily during the fifth year of the Ph.D. program.

3. Successful completion of the comprehensive exams.

Minor in Psychology

Graduate students taking major work in other departments and graduate minor work in psychology for a master’s degree should have the equivalent of an undergraduate minor in psychology with the following specific courses: Introduction to Psychology, Developmental Psychology, Abnormal Psychology (or the equivalent). Any of the psychology courses which carry graduate credit are acceptable for the graduate minor.
Graduate students taking major work in another department and minor work in psychology for a doctoral degree, in addition to hav- ing the undergraduate preparation noted in the paragraph above, must also have completed a course in statistics and an undergraduate labo- ratory course in Experimental Psychology. No specific courses are required for the graduate minor except that one-half of the total cred- its for the minor must be 500-level credits.

Courses

501. Psychological Foundations of Education. 3 credits. Prerequisite: Graduate standing in Psychology or Education. A study of the learning process with secondary emphasis on how the learning process is affected by individual differences, growth, de- velopment, and personality.

505. History of Psychology. 3 credits. Prerequisite: Graduate standing in Coun- seling or Psychology. Historical development of modern psychology with an emphasis on experiential and systematic phases of early psychological thought, on important issues during the growth of psychology, and on current trends.

533. Theories of Learning. 3 credits. Prerequisite: Graduate standing in Psychol- ogy or consent of instructor. Examination of the evidences in support of the various systematic theories of learning.

535. Physiological Psychology. 3 credits. Physiological basis of psychological functions.

537. Psychophysiology. 3 credits. Prerequisite: Graduate status in psychology. Examination of the anatomy and physiology of several physiologic systems, the relationship between behavior and physiology, and the importance of individual differences in physiological responses.

539. Cognitive Psychology. 3 credits. Prerequisite: Graduate status in psychology or permission of instructor. An in-depth analysis and discussion of topics covering issues related to memory, attention, problem solving, compre- hension, and thinking.

541. Advanced Univariate Statistics. 3 credits. Prerequisite: Graduate standing, college algebra, and elementary statistics. Theory of univariate statistics; application to quantitative data in psychology.

542. Multivariate Statistics for Psychology. 3 credits. Prerequisites: Graduate standing and Psychology 541. The appropriate use and interpretation of multivariate data analytic techniques in psychology.

543. Experimental Design. 3 credits. Prerequisite: Psychology 541 or consent of instructor. Application of statistics and probability theory to the design and analysis of experiments.

551. Advanced Developmental Psychology. 3 credits. Prerequisites: Psychology 570, and/or consent of instructor. Provides the conceptual and practical frameworks upon which to build expertise in the assessment and prediction of major developmental milestones, and the opportunity to fulfill them.

560. Advanced Social Psychology. 3 credits. Prerequisite: Graduate status in Psychology. In-depth examination of the theoretical and empirical literature in social psychology focusing on attitudes, stereotyping and prejudice, interpersonal relationships, social cognition, personality and the self, and group behavior. Also includes additional course readings and written work beyond the requirements for Psychology 460.

565. Multicultural Psychology. 3 credits. Prerequisites: Graduate status in psy- chology. Examination of the cultural aspects of psychology, its contributions to, and applications within, a multicultural perspective. Focus will be on major cultural communities, including American Indian and other cultural communities.

570. Clinical Assessment I: Basic Issues in Clinical Assessment. 4 credits. One hour lecture, four hour laboratory. Prerequisites: Clinical psychology graduate status or consent of instructor. Provides the conceptual and practical frameworks upon which to build expertise in the assessment and prediction of human behavior in relation to intellectual, personality, and psychosocial functioning. Topics include assessment, diagnosis, and intervention across the lifespan.

571. Clinical Assessment II. Advanced Issues in Clinical Assessment. 4 credits. Prerequisites: Psychology 570, and/or consent of instructor. Provides the conceptual and practical frameworks upon which to build expertise in the assessment and prediction of human behavior in relation to personality assessment, behavioral assessment, neuropsychological assessment, and the assessment of high incidence behavioral disorders. Skills in writing technical reports and case conference presentation will be developed.

572. Community Psychology. 3 credits. Prerequisites: Psychology 571, 573, and graduate standing in Psychology. Theories and practicum in community mental health consultation and intervention. Credits in 572 may be counted toward this course.

573. Theories of Psychotherapy. 3 credits. Prerequisites or corequisite: Psychol- ogy 571 and/or consent of instructor. Theories and practicum in individual, group, and family psychotherapy. Focus will be on systematic comparison of major theoretical viewpoints.

574. Advanced Therapeutic Interventions. 3 credits. Prerequisites: Psychology 573 or permission of instructor. An in-depth study of the key issues of psychotherapy research with a focus on critical evaluation of the psychotherapy research literature and the development of knowledge of empirically-supported approaches to psychotherapy with specific problems.

575. Behavior Pathology. 3 credits. Prerequisites: Psychology 270 and consent of instructor. A survey of various forms of behavior pathology with emphasis upon current research and theories relating to pathology.

576. Child Psychopathology and Treatment. 3 credits. Prerequisites: Psychol- ogy 570 and 575 or instructor permission. An overview of child and developmental psy- chopathology including discussion of pertinent treatments for disorders such as conduct disorders, attention-deficit, substance abuse, and developmental disabilities.

579. Professional Issues and Ethics in Psychology. 3 credits. Prerequisites: Graduate standing in Psychology or consent of instructor. An exploration of ethical issues pertinent to the science and practice of psychology and discussion of current professional issues facing psychology.

580. Clinical Practice. 1 to 3 credits. Prerequisites: Psychology 571, graduate standing in Psychology, and consent of instructor. Supervised individual practice in tech- niques of individual psychotherapy, marital therapy, counseling, and guidance of parents and children, administration of psychological examinations, behavior modification, com- munity mental health procedures, consultation, and other professional practices of the clinical psychologist. May be repeated to fifteen credits. S/U grading only.

587. Supervised Field Work. 1 to 3 credits. May be repeated. Prerequisites: graduate standing in Psychology and consent of instructor. Used primarily for individualized field placement so that the student may acquire practicum experiences in clinical settings, community psychology, and group methods. S/U grading only.

593. Readings in Psychology. 1 to 3 credits. Prerequisites: Advanced standing in psychology and consent of instructor. May be repeated.

594. Special Topics in Psychology. 1 to 3 credits. Prerequisite: consent of instruc- tor. Topical courses in Psychology organized on a semester-by-semester basis.

595. Seminar in Psychology. 1 to 3 credits. Prerequisite: consent of instructor.

596. Individual Research. Credits to be arranged.

421. Individual and Group Differences. 2 to 3 credits.

434. Motivation and Emotion. 3 credits.

435. Physiological Psychology. 3 credits.

436. Perception. 4 credits.

450. Child Clinical Psychology. 3 credits.

470. Introduction to Clinical Psychology. 3 credits.

Public Administration

Professors Jendrysik, Jensen, M. Kweil, R. Kweil (Graduate Director), Light and Sun

Master of Public Administration

Program Description

The purposes of the M.P.A. program are to prepare students for positions in the public service and the non-profit and health sectors and to increase the skills of persons already in those areas. The pro- gram achieves these purposes through a multidisciplinary curricu- lum which requires the students to have a basic understanding of the American political system, instructs the students on the fundamental concepts of public administration, and prepares the students to apply basic administrative principles in public management. The depart- ment offers a combined BSPA/MPA or a BAMA program for stu- dents who meet the admission criteria.

Admission Requirements

1. Graduate Record Examination General test, the Graduate Management Admission Test or the Law School Admis- sion Test. Students wishing to apply for Graduate Teach- ing Assistantships must take either the GRE or GMAT ex- ams.

2. Minimum competence in public administration, adminis- trative sciences, and methodology. This competence is nor- mally demonstrated by at least one course in each of five fields (Political Science, Accounting, Economics, Manage- ment, and Statistics), by special exams in the fields, or by practical experience.

3. Twenty hours in the social sciences, business administra- tion, and related fields.

4. Students who do not meet the requirements will be given the opportunity to fulfill them.

Degree Requirements

1. A minimum of 32 semester credits. A minimum of 35 cred- its is required for students without one year of administra- tive experience.

2. A minimum of 23 credits in public administration and up to 9 credits in cognate fields to total 32 credits.

3. At least one-half of the credits must be at the 500-level.
4. A maximum of eight credits may be transferred to UND from other institutions.
5. The following are required for all students:
   - POLS 500 Research Methods 3 credits
   - POLS 501 Political & Policy Analysis 3 credits
   - POLS 531 Seminar: Public Administration 3 credits
   - POLS 580 Administrative Internship* 3 credits
   - POLS 997 Independent Study 2 credits
   - General or Health Core Courses 12 credits
   - POLS Electives or cognate/elective courses 9 credits
   Total: 32-35 credits
   *This requirement will be waived for students with at least one year of administrative experience.
6. Students in the general track will choose 12 credits from the following clusters:
   Select six credits from:
   - POLS 536 Public Personnel 3 credits
   - POLS 538 Budgeting and Financial Management 3 credits
   - POLS 539 Administrative Law 3 credits
   Select six credits from:
   - POLS 502 Seminar: Problems in State and Local Government 3 credits
   - POLS 508 Seminar: Legislative and Executive Process 3 credits
   - POLS 532 Public Policy 3 credits
   - POLS 533 Administrative Ethics in the Public Sector 3 credits
7. Students in the health concentration must take the following courses:
   - POLS 551 Health Administration and Organization 3 credits
   - POLS 552 Health Policy 3 credits
   - ECON 575 Health Economics 3 credits
   - LAW 291 Legal and Ethical Issues in Health Care 3 credits
   (Also offered as POLS 593, Problems in Political Science and Public Administration)
8. A thesis option is also available. See the Degree Requirements section for a detailed explanation.

**Residence Requirement.** There is no residence requirement for the M.P.A. degree; however, at least one-half of the credits for the degree must be taken on campus or at an approved extended degree center.

**Independent Study.** The independent study is designed to require the student independently to investigate a topic related to the field of public administration. The study need not be an original contribution to knowledge but may be a presentation, analysis, and discussion of information and ideas already in the literature of the field. The requirement is to ensure that a student can investigate a topic and organize a scholarly report on the investigation.

The topic for an independent study must be approved by the student’s advisor. Approval is effectuated by the student’s completing a form titled Proposal of Independent Study, available from the Graduate School, then submitting the proposal to the advisor for approval. The proposal, which should be approved no later than the beginning of the semester or session in which the student expects to graduate, must be filed in the Graduate School before a student is advanced to candidacy for a master’s degree.

Each student must prepare and secure the advisor’s approval of an independent study report. Three copies of the report (one each for the student, the advisor, and the department) must be accepted by the advisor, who will certify completion of the report to the Graduate School by the deadline specified in the Academic Calendar and submit a grade for 997-Independent Study to the Office of the Registrar.

**Candidacy for the Degree.** Admission of a student to the Graduate School as a degree student in Approved Status implies only that the student has met minimum entrance requirements and will be permitted to take graduate courses which normally may be expected to lead to a degree. The student has not been admitted as a candidate for a degree. Advancement to candidacy can be granted only after the student has met certain academic requirements in approximately the following sequence:

1. Completion of the equivalent of one full-time semester (12 semester credits).
2. A GPA of at least 3.00 for all work attempted.
3. The early appointment of an advisor. The advisor, who must be a member of the Graduate Faculty, will be appointed by the dean upon the written recommendation of the M.P.A. program director. The advisor is responsible to the department and the Graduate School for the supervision of the student’s work.
4. Approval of a Program of Study on a form available from the Graduate School. The program, which should be developed in consultation with the advisor normally early in the second semester, must carry the signature of the student, the advisor, and the program director and must be submitted to the dean of the Graduate School for approval.
5. Approval of a topic for the independent study by having the advisor sign the Proposal of Independent Study and submitting the Proposal and three copies to the Graduate School.

The student and the advisor will be notified in writing of the advancement to candidacy. Students must complete all requirements for advancement to candidacy prior to the semester in which they plan to graduate.

**Final Examinations.** Candidates must pass a written final comprehensive examination which must cover the course work included in the program of study. The results will be certified to the Graduate School by the advisor and the program director on the form Final Report on Candidate by the deadline specified in the Academic Calendar. The appropriate comprehensive examination(s) required for the degree will be arranged for by the advisor and given and evaluated by the department no earlier than the semester preceding the semester in which the candidate intends to graduate. Comprehensive examinations which are failed may be repeated only with the approval of the advisor, the program director, and the dean, but in no event earlier than at the next regularly scheduled offering.

**Joint MPA/JD Program Admission Requirements**

1. Students are required to apply to both the Law School and the Graduate School and indicate that they wish to be admitted to the joint MPA/JD track. This admission will be determined by the Director of the M.P.A. Program and the Dean of the Law School or their designees.
2. Acceptance to the joint program track requires a minimum overall undergraduate GPA of 3.00 or a GPA of 3.25 in the last two academic years.

**Sample Curricular Plan**

<table>
<thead>
<tr>
<th>Year One</th>
<th>Law School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year Two</td>
<td>Law School w/two MPA courses*</td>
</tr>
<tr>
<td>Year Three</td>
<td>Law School w/two MPA courses</td>
</tr>
<tr>
<td>Year Four</td>
<td>Six MPA courses + Independent Study</td>
</tr>
<tr>
<td>Year One</td>
<td>Seven MPA courses</td>
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<tr>
<td>Year Two</td>
<td>Law School</td>
</tr>
<tr>
<td>Year Three</td>
<td>Law School w/two MPA courses*</td>
</tr>
<tr>
<td>Year Four</td>
<td>Law School w/one MPA course + Independent Study</td>
</tr>
</tbody>
</table>

*2 MPA course requirements could be met with law courses as cognates.
Six credits (approved by the Law School) from the MPA Program will count toward the Law Degree. Six of the 32 required credits in the MPA program can be law courses used as a cognate for the MPA degree (with the approval of the department and the Dean of the Graduate School).

The total credits required for each degree will be unchanged, because each program will accept six credits toward the other degree. This will save the student one semester (12 credits) and make the program more appealing.

Normally, the joint program will be completed in only four years. With summer school classes it may be possible to obtain both degrees even more quickly. Students must be enrolled in the Law School for at least three years; therefore, students wishing to receive both degrees in less than four years should enroll first in the Law School.

Below is a list of Law School courses which can be used as cognates in the MPA program and MPA courses which can be used as electives in the JD program.

**Joint MPA/JD Complementary Courses**

**LAW**
- LAW 150 Constitutional Law I
- LAW 152 Constitutional Law II
- LAW 201 Agriculture Law
- LAW 203 Employment Discrimination Law
- LAW 206 Law of Politics
- LAW 210 Administrative Law
- LAW 263 Environmental Law
- LAW 277 Land Use Planning
- LAW 281 Legislation
- LAW 289 State and Local Government Law
- LAW 291 Poverty Law
- LAW 291 Civil Rights
- LAW 291 State Constitutional Law

Or other courses with the approval of the Dean of the Law School

**POLITICAL SCIENCE & PUBLIC ADMINISTRATION**
- POLS 308 Intergovernmental Relations
- POLS 404 Urban Politics and Administration
- POLS 405 Political Behavior
- POLS 502 Problems in State and Local Government
- POLS 508 Legislative Executive Processes
- POLS 531 Public Administration
- POLS 532 Public Policy
- POLS 535 Public Organizations
- POLS 536 Public Personnel Administration
- POLS 538 Public Budgeting and Financial Management
- POLS 539 Administrative Law

Or other courses with the approval of MPA Director and Graduate Dean

**BSPA/MPA or BA/MPA Program**

**Admission Requirements**
1. 3.25 G.P.A. overall and in major
2. Completion of 90 credit hours
3. Graduate Record Examination General Test or the Graduate Management Admission Test

**Degree Requirements**
1. In year 4:
   a. Complete approximately 20 undergraduate hours including prerequisites if necessary
   b. Complete 12 graduate hours (500-level courses are offered on a two-year cycle)
2. In year 5:
   a. Complete approximately 10 additional undergraduate hours

b. Complete 20 additional graduate hours (500-level courses are offered on a two-year cycle)

**Certificate Programs in Public and Health Administration**

Three certificate programs are also offered. Each program consists of four three-credit courses that must be taken for a grade and the GPA must be at least 3.0. These programs are open to anyone with an undergraduate degree in any area of study. The certificate programs are offered to those who do not wish to make the initial commitment to a master’s degree program but wish to update or upgrade their skills. All courses taken may be applied to an MPA if a student decides to pursue the degree.

**Certificate in Public Administration**

This program seeks to provide the management core needed by professionals from many academic backgrounds who have risen to positions of authority in the public and not-for-profit sector without benefit of formal management training. Take four of the following:

**Courses**
- POLS 552 Health Policy ........................................... 3 credits
- POLS 551 Health Organization & Administration ... 3 credits
- LAW 291 Legal and Ethical Issues in Health Administration ........................................... 3 credits
- LAW 291 Legal and Ethical Issues in Health Administration ........................................... 3 credits
- LAW 291 Legal and Ethical Issues in Health Administration ........................................... 3 credits
- LAW 291 Legal and Ethical Issues in Health Administration ........................................... 3 credits
- ECON 575 Health Economics .................................... 3 credits

**Certificate in Public Administration**

This program seeks to provide the analytic skills needed by professionals from many academic backgrounds who are required to do or understand policy analysis and program planning in the public and not-for-profit sector. Even managers who do not do research themselves must understand the work of others if they are to make informed decisions based on the information provided in research reports. Take four of the following courses:

**Courses**
- POLS 531 Seminar: Public Administration.............. 3 credits
- POLS 533 Administrative Ethics in the .............. 3 credits
- POLS 536 Public Personnel Administration ........................ 3 credits
- POLS 538 Public Budgeting and Financial Administration ........................ 3 credits
- POLS 539 Administrative Law ................................. 3 credits

**Certificate in Policy Analysis**

This program seeks to provide the analytic skills needed by professionals from many academic backgrounds who are required to do or understand policy analysis and program planning in the public and not-for-profit sector. Even managers who do not do research themselves must understand the work of others if they are to make informed decisions based on the information provided in research reports. Take four of the following courses:

**Courses**
- POLS 500 Research Methods ............................. 3 credits
- POLS 501 Political and Public Policy Analysis .... 3 credits
- POLS 532 Public Policy ........................................ 3 credits
- POLS 502 Seminar: Problems in State and ............ 3 credits
- POLS 508 Legislative and Executive Processes.... 3 credits

**500. Research Methods** 3 credits. Prerequisite: A statistics course or consent of instructor. This course will cover various approaches to analyzing political phenomena with the goal of developing students’ ability to think analytically and to distinguish between empirical and normative analysis. The course will introduce techniques of empirical research including research design, measurement, data gathering, and data analysis.
Social Work

Professors Blahy, Bruno, Haga, Heitkamp, Houston, Kraft, Perry, Stevens and Woehle (Chair)

Program Description

The Department of Social Work offers a graduate program leading to the Master of Social Work (MSW) degree. This program is accredited by the Council on Social Work Education (CSWE). The program offers a concentration in advanced generalist practice.

The Master of Social Work program is designed to prepare social workers for employment in a wide variety of human service agencies including family service organizations, child welfare agencies, health and mental health settings, and public social service agencies. The Master of Social Work program is also appropriate for those social workers who may be planning to eventually enter a doctoral program in social work.

Admission Requirements

1. Minimum standards for admission are:
   a. Ability to communicate in such a manner as to facilitate a helping relationship and the delivery of services.
   b. Mobility sufficient to perform essential social work-related activity.
   c. Personal resources (psychological, social and intellectual) that facilitate the use of self in a helping manner in a social work setting.
   d. Sufficient computer skill and availability to access program content by computer.

2. Satisfactory completion of at least 30 semester credit hours of liberal arts courses in such fields as economics, political science, history, literature, sociology, psychology, and philosophy. A course in biology is required.

3. Satisfactory completion of a course in statistics within seven years of admission, or satisfactory completion of a statistics examination given by the Department of Social Work.

4. Submission of a statement delineating qualifications and reasons for pursuing an MSW degree.

5. Submission of references as designated by the Department of Social Work which reveal the applicant's qualifications for social work and potential for success in social work.

6. A direct supervisor of work in a recent job, preferably a social work supervisor.

7. An undergraduate academic advisor or someone else who is able to evaluate academic work.

8. A non-relative who can address potential for the social work profession.

A signed statement indicating that the applicant will abide by the National Association of Social Worker’s Code of Ethics and the University of North Dakota Student Code of Conduct.

Reading Education

(See Education: Reading Education)
7. Satisfactory responses to questions during an interview with the MSW Admission Committee.

**Advanced Standing**

Applicants who have received baccalaureate degrees in social work from CSWE accredited programs, have met the statistics requirement, and have a GPA of 3.00 or better for that degree, may have up to 22 hours of foundation credits waived. Applicants must have a grade of "B" or better in foundation courses for which Advanced Standing is granted, or they may request an assessment by faculty. That assessment will consist of an interview in which students are asked about practice case examples, proposing research design, analysis of policy or application of human behavior theory as appropriate. The foundation courses subject to waiver are:

- SWK 510 Human Behavior in the Social Environment I
- SWK 511 Foundation Social Work Practice
- SWK 512 Foundation Social Work Practice Skills Lab
- SWK 513 Social Welfare Policy I
- SWK 514 Social Work Research I
- SWK 570 Prefield Seminar I
- SWK 571 Field Instruction I
- SWK 572 Field Seminar I
- SWK 573 Field Instruction II
- SWK 574 Field Seminar II

Applicants who believe they are eligible to have foundation courses assessed for waiver should make their intent known to the coordinator of the MSW program within three weeks of being notified of their acceptance into the MSW program. Applicants not entitled for advanced standing will be required to complete foundation courses which may be offered on a part-time basis and at distant sites. Foundation practice courses normally will be offered on campus in Grand Forks during the summer.

**Program Requirements**

1. Successful completion, or waiver as described above, of 60 semester credit hours of courses approved by the social work faculty with at least a 3.00 grade point average.
2. Satisfactory waiver or completion of all foundation courses including SWK 510, SWK 511, SWK 512, SWK 513, SWK 514, SWK 570, SWK 571, SWK 572, SWK 573 and SWK 574.
3. Satisfactory completion of the advanced generalist concentration courses including SWK 520, SWK 521, SWK 522, SWK 523, SWK 524, SWK 525, SWK 536, SWK 537, SWK 538, SWK 539, SWK 540, SWK 541, SWK 542, SWK 543, SWK 544, SWK 545, SWK 546, SWK 547.
4. Completion of the courses in the recommended sequence unless other arrangements are negotiated.
5. Completion of SWK 570, SWK 571, SWK 572, SWK 573 and SWK 574 or equivalents, and completion of SWK 575, SWK 576, SWK 577 and SWK 578 as described in the Social Work Field Instruction Manual.
6. Completion of SWK 997, an independent study and comprehensive exam, or SWK 998, a thesis.
7. Completion of at least 24 semester credits with UND. Transfer credits must be obtained in a CSWE accredited program, and a maximum of 15 credits will be allowed for transfer. (See General Academic Policies—Transfer of Graduate Credit for additional restrictions.)
8. The development of a program of study in the semester in which the full-time student first enrolls in concentration courses, or the second semester in which the part-time student enrolls in concentration courses.
9. Part-time students will meet the residency requirement by enrolling in a minimum of 18 credits in a two-year period, including at least one summer with a minimum of six-credit enrollment on campus in Grand Forks and participation in a common professional seminar near the end of their program.

**Thesis Option**

1. Students completing a thesis must establish a Faculty Advisory Committee by the end of the semester in which the full-time student first enrolls in concentration courses, or the second semester in which the part-time student enrolls in concentration courses.
2. Students completing a thesis must submit an outline of the thesis by the end of the semester in which the full-time student first enrolls in concentration courses, or the second semester in which the part-time student enrolls in concentration courses.

**Non-Thesis Option**

1. Students completing an independent study must select an adviser and submit an outline of the study by the end of the semester in which the full-time student first enrolls in concentration courses, or the second semester in which the part-time student enrolls in concentration courses.
2. Students completing an independent study must complete a final comprehensive examination administered by the department, normally in their last semester of enrollment.

**Candidacy for the Degree**

Please see descriptions of the requirements for Candidacy for both Thesis and Independent Study options.

**Courses**

510. Human Behavior in the Social Environment I. 2 credits. Prerequisites: Formal admission to the MSW program or consent of the instructor. This course is designed to provide the student with a working knowledge of the concepts, principles, and theories of human behavior. The course will also focus on the social and cultural context of human behavior.

511. Foundation Social Work Practice. 3 credits. Prerequisites: Formal admission to the MSW program. Corequisites: SWK 512. The purpose of this course is to provide the student with an understanding of the social and cultural context of human behavior, and to develop the student's ability to apply this understanding in practice.

512. Foundation Social Work Practice Skills Lab. 2 credits. Prerequisites: Formal admission to the MSW program. Corequisites: SWK 511. This course is designed to provide the student with a working knowledge of the concepts, principles, and theories of human behavior. The course will also focus on the social and cultural context of human behavior.

513. Social Welfare Policy I. 2 credits. Prerequisites: Formal admission to the MSW program or consent of the instructor. This course is intended to provide students with an understanding of the historical and social context of social welfare policy, and to develop the student's ability to apply this understanding in practice.

514. Social Work Research I. 2 credits. Prerequisites: Formal admission to the MSW program or consent of the instructor. This course is intended to provide students with an understanding of the methods and techniques of social work research, and to develop the student's ability to apply this understanding in practice.

520. Human Behavior in the Social Environment II. 2 credits. Prerequisites: SWK 514 or equivalent, advanced standing in the MSW program or consent of the instructor. This course is designed to provide the student with an understanding of the social and cultural context of human behavior, and to develop the student's ability to apply this understanding in practice.

522. Advanced Generalist Practice with Families. 2 credits. Prerequisites: SWK 511, SWK 512 or equivalent, advanced standing in the MSW program. The purpose of this course is to provide the student with an understanding of the social and cultural context of human behavior, and to develop the student's ability to apply this understanding in practice.

523. Social Welfare Policy II. 2 credits. Prerequisites: SWK 513, or equivalent, advanced standing in the MSW program or consent of the instructor. This course is designed to provide the student with an understanding of the social and cultural context of human behavior, and to develop the student's ability to apply this understanding in practice.

524. Social Work Research II. 2 credits. Prerequisites: SWK 514 or equivalent, advanced standing in the MSW program or consent of the instructor. This course is designed to provide the student with an understanding of the social and cultural context of human behavior, and to develop the student's ability to apply this understanding in practice.
the beginning phase of student internship. During this course students will receive a thorough orientation to the internship agency and its various social work roles. Students will also learn about the agency’s organizational context, its community context (both geo-cultural and professional), and the process of taking on professional social work roles in the agency. 3 credits. 277. Field Seminar III 1 credit. Corequisite: SWk 576. This seminar course provides the student in a field placement with opportunities to integrate theory and practice at the level of advanced-generalist through discussion and written assignments.

278. Field Seminar IV. 4 credits. Prereqs: or corequisite: SWk 574. During this course, internship students will become more independent in their social work role(s). In addition, students will engage in activities designed to increase self-awareness, develop their professional identities, and refine their intervention skills. S/U grading only.

279. Individual Study 1-2 credits, repeatable for a maximum of 4 credits. Prereqs: Consent of instructor. Variable topics in social work related areas carried out individually or in small groups under the supervision of the instructor.


Sociology

Professors Crawford, DiCristina, Driscoll, Gottschalk, Huffman (Graduate Director), Hume, Larson, Ludtke, Meyer, Moen, Staples (Chair), Stofferahn and Tiemann

Program Description

Thirty undergraduate credits, including thesis work, are required for a Master of Arts degree. The program of study is divided into four components: scholarly tools, core curriculum, cognate, and thesis. The core courses include sociological thought, social theory, research design, and analytical methods. Courses in the scholarly tools component include one course in statistics and other courses in research methods. The cognate includes nine credits in a minor or cognate; and thesis is comprised of four credits.

Admission Requirements

1. Completion of a minimum of twenty semester hours of undergraduate sociology or related fields with an overall grade point average of 3.00 (A=4.0), a GPA of at least 3.25 for the last two years of undergraduate study; and 3.25 GPA in their major.

2. Approved status presupposes some undergraduate training in methods of social research, statistics, sociological theory and social psychology with a minimum grade of B in each.

Degree Requirements

1. Program must include a systematic treatment of the field of sociological theory plus sufficient training in research methods and statistical techniques to assure understanding and competence in their use. This is fulfilled upon successful completion of (grade B or higher) in Soc 510, Soc 511, Soc 520, Soc 521, and EFR 516.

2. One graduate seminar.

3. Students in the pre-doctoral track typically declare cognates in sociology, theory and philosophy, or methodology and statistics. These cognates prepare them for admission to doctoral programs in sociology or to teach at a junior or community college.

4. Students in the sociological practice track typically declare cognates in planned intervention, public policy, organizational behavior, management, or criminal justice. These cognates prepare them for employment with federal or state agencies or private businesses.

5. Other cognates of a student’s own choosing may be approved by their faculty advisory committee.

6. Faculty will assist students in the sociological practice track in locating an internship to gain practical experience.
7. Under exceptional circumstances, where the spirit of residency is met, the Department may waive the residence requirements for an M.A. in Sociology. (See the Academic Policies section for a definition of Residence.)

509. Professional Seminar 1 credit. Prerequisites: Admission to the graduate program in Sociology. The course is intended as an introduction to graduate studies, the university and to the opportunities in the discipline of Sociology.

510. Sociological Inquiry 3 credits. This course focuses on the processes by which sociologists perceive, understand, and study social phenomena.

511. Contemporary Sociological Theory 3 credits. An examination and comparison of the major current sociological theories.


520. Advanced Research Design 3 credits. Prerequisites: Sociology 322 and 326. This course emphasizes the development of research design skills including survey research.

521. Advanced Analytical Methods 3 credits. Prerequisites: Sociology 323, 326, and 520. An in-depth examination and application of the following topics as they relate to survey research in sociology: data processing, quantification and analysis of data, analytical design, and procedures. The student will apply the various analytical methods to available data.

528. Seminar in Research Methods 2 to 4 credits. Prerequisite: Sociology 323. An examination of special topics in the field of research methods.

537. Graduate Cooperative Education 3 credits. Prerequisites: Program of study committee and Director of Graduate Studies approval. A practical work experience with an employer closely associated with the student’s cognate area.

538. Seminar in Social Organization 2 to 4 credits.

558. Seminar in Social Disorganization 2 to 4 credits.

568. Seminar in Social Psychology 2 to 4 credits. Prerequisite: Sociology 361.

590. Individual Research 1 to 4 credits. Maximum of six credits.

407. Political Sociology 3 credits.

409. Computer Applications 3 credits.

431. Organizations and Behavior 3 credits.

435. Racial and Ethnic Relations 3 credits.

456. Social Inequality 3 credits.

457. Population 3 credits.

459. Deviant Behavior 3 to 4 credits.

492. Practicum in Sociology 3 credits.

494. Readings in Sociology 1 to 5 credits.

998. Thesis 4 to 9 credits.

Space Studies

Andres, de Silva (Chair), Gaffey, Johnson, McLaughlin and Sadeh (Graduate Director)

Program Description

The Department of Space Studies offers graduate studies leading to the Master of Science degree. Non-thesis and thesis options are available. The all-encompassing nature of space exploration requires people who possess broad backgrounds that link policy, business, law, science and engineering. The Space Studies department seeks to train this vital segment of the community through the non-thesis option. The goal is to integrate, rather than separate, traditional disciplines related to space. Specialized training is also an essential part of the space community and this is achieved through the thesis option that affords students the opportunity to specialize in an area of faculty research. We encourage you to explore the departmental web page (http://www.space.edu/) for information on current faculty research interests and available projects.

Our programs are designed to prepare the students for futures in the academic, commercial, and governmental sectors of the rapidly growing field of space exploration and the development of space.

Facilities for Graduate Research

The department is located on the fifth floor of the 71,500 square-foot Clifford Hall constructed in 1992 as part of the John D. Odegard School of Aerospace Sciences complex on the west end of the UND campus. Facilities include an image processing laboratory for analysis of terrestrial and planetary image data. Recent data sources include ASTER, Galileo, Landsat TM and ETM, Magellan, MOC, MOLA, NEAR, NOAA weather satellites and the Department’s astronomical telescopes. The Department’s Planetary Science Observatory includes an 18” Newtonian reflector, a 16” Schmidt Cassegrain telescope, a filter wheel, adaptive optics accessory and CCD cameras. The 16” telescope is designed to be completely controllable over the Internet. The Department’s astronomical research focuses on small bodies such as comets and, in particular, near-Earth asteroids. A SuomiNet GPS station links UND to a global network focused on geodetic and atmospheric research.

Admission Requirements

Current admission requirements include the following:

1. A baccalaureate degree with a major in one of the following fields: business; communication and information systems; engineering; social science or other related discipline.
2. One course in statistics, calculus, or a formal computer programming language (Computer Science 260 or equivalent) at the college level.
3. One course in psychology, political science, or sociology.
4. One course in science.

Check our web sit at: http://www.space.edu for updates.

Financial Assistance

Graduate assistantships (GTA’s) are available from a variety of internal and external sources. These are awarded on the basis of academic merit and students’ abilities to contribute to departmental research and teaching. Students seeking assistantships should apply by February 1 since decisions on appointments are made in March. Funding is renewable if progress towards the degree, research goals and teaching are satisfactory. Support is typically for two years on a nine-month basis. Summer funding may also be available.

Degree Requirements

Master of Science

Non-Thesis Option

32 credits to include:

1. SpSt 501 (3 credits)
2. SpSt 997 (2 credits)
3. Two courses in the policy area
4. Two courses in the technical area
5. Five elective courses
6. Comprehensive examination

Space.edu students must also complete SpSt 595 Capstone in the summer before they intend to graduate.

Thesis Option

30 credits to include:

1. SpSt 501 (3 credits)
2. Two courses in the policy area
3. Two courses in the technical area
4. Two elective courses
5. SpSt 593 (3 credits)
6. SpSt 998 Thesis (6 credits)

Approval of thesis option will only be granted if a clear alignment of research interests of faculty and students can be demonstrated, and a faculty advisor has been identified and is available to supervise the research. (Space.edu students wishing to complete the thesis option must satisfy the graduate school residence requirement.)

Cognate/Minor

The Department of Space Studies invites students from other programs who wish to expand their program of study to include a space-related focus. The nature of our program is such that we have a multidisciplinary set of course offerings that mesh well with and
extend graduate programs in other disciplines. Students interested in a focus on space engineering, space business, space law, space policy, space science, space history, or military space can be accommodated. To complete a cognate or minor at the master’s level, students must take SpSt 501 plus two other courses for a total of nine semester hours. For doctoral students, if his or her department requires more credits for a minor, the director of graduate studies or the chairperson of Space Studies will work with them to select additional coursework to meet that minimum.

Courses

Check http://www.space.edu for updated course descriptions.

500. Introduction to Orbital Mechanics. 3 credits. Prerequisites: SpSt 200 undergraduate, SpSt 501 graduate. This course introduces students without much background in either mathematics or physics to the problems faced everyday by orbital analysis as they track the 7000 satellites which orbit the earth. The course gives the students an ability to convert, as managers and co-workers, to those individuals who are calculating these difficult orbits. This appreciation is important in both the civilian and military sides of the space program.

501. Survey of Space Studies. 3 credits. A broad, multidisciplinary survey of our space program and its meaning for the future economic and national security of the nation. Emphasis will be placed on the international aspects of humanity’s move into this new milieu and what this means in terms of cooperation and competition for the United States. The course will include a survey of the major scientific and technical issues involved. SpSt 501 is a prerequisite or co-requisite to all other 500 level courses.

515. Human Factors in Space. 3 credits. A review of the major stress experienced by humans on entering the new and alien environment of space. Examples will be taken from the psychological and physiological impacts experienced by U.S. and Soviet crews with emphasis on longer flights. How to avoid and/or overcome these stresses will be examined as an essential and growing need in the future development and settlement of the space frontier.

520. Asteroids, Meteorites and Comets. 3 credits. Prerequisites: SpSt 501 or permission of instructor. The small bodies of the solar system are clues to its origin. All planets and larger moons have been chemically transferred, but many asteroids, meteorites and comets are apparently little modified from the time of their origin 4.5 billion years ago. Each of these classes of objects is investigated separately, and relationships between them are examined.

525. Technical Issues in Space. 3 credits. An examination of the highly developed technological base required for the exploration and development of space. An understanding of this technology and of its impact upon humans is essential to an appreciation of many of the issues and problem areas that are and will be associated with our continuing efforts to explore and settle this new frontier. May be repeated if the topic is different.

535. Satellite Information Processing. 3 credits. The complex issues raised by the creation of new means of observing and managing our planet will be examined. Three billion bits of data per day are already being transmitted to Earth from satellites in space. This is anticipated to reach ten trillion bits in the next decade. Knowledge of which of these data to treat and how is already a critical issue for the successful management of our planet. The development of new earthbound institutions and autonomous, orbiting, intelligent systems is essential to the solution of this issue. Similarly, in-space data needs and use will grow exponentially once the space station and associated facilities are in operation.

541. Management of Space Enterprises. 3 credits. This course investigates the management of space organizations. These include organizations that are public and private, R&D and operations, profit and non-profit. You will learn the basics of management theory, the history of systems management, and the technical issues that must be considered in the management of space R&D and operations.

545. Space Policy and International Implications. 3 credits. Analysis of U.S. international space policy and the strengths and weaknesses it has demonstrated. Proposals for change and their implications are discussed. Space exploration and development is now a multi-national rather than single-nation activity. What effect does, should, this have on the development of space policy and our overall relations with other nations and international organizations?

550. Aerospace Vehicles and Facilities Operations. 3 credits. A technically oriented examination of the management issues involved in the planning, design, development and operation of new and existing vehicles and facilities. The course will include a review of present vehicles and those that will be required in the next two decades, from expendable launchers to the aerospace plane.

555. History of the Space Age. 3 credits. This course introduces students to the history of human endeavors in space. These include the development of rocketry, the influence of amateur societies and space fiction, the military development of ballistic missiles, and human and robotic spaceflight.

560. Space Politics and Policy. 3 credits. Prerequisite: SpSt 501 or consent of instructor. This course serves as the introductory graduate course to the field of Public Policy as applied to Space Policy. The course surveys the evolution of Space Policy at several levels of analysis including historical context, political actors and institutions, political processes, and policy outcomes, and assesses the symbiotic relationship between policy, technology, and science.

565. Space Treaties and Legislation. 3 credits. A review of international treaties governing the uses of outer space as well as the domestic laws regulating commercial activities in space.

570. Advanced Topics in Space Studies. 1 to 3 credits. Lecture, discussion and readings on advanced topics of current interest. May be repeated if the topic is different.

575. Remote Sensing Law and Policy. 3 credits. Corequisite: SpSt 501. This course focuses on the evolving laws, policies, and institutions that have long-term ramifications for earth observations. Some topics addressed are the United Nations Principles on Remote Sensing; the United Kingdom’s 1984 National remote sensing policy; the Montreal Protocol; and, the United States Land Remote Sensing Policy Act of 1992. Ground segment institutions considered are the Landsat Ground Stations Operations Working Group and the Global Land 1-KM AVHRR Project. Remote sensing litigation that has begun to address various applications of remote sensing will also be considered. Cases include Dow vs US and EOSAT vs NASA and NOAA.

590. Space Studies Seminar. 1 credit. A series of lectures presented by visiting lecturers and the faculty. May be repeated for up to 4 credits.

593. Individual Research in Space Studies. 1 to 3 credits. Individual student projects designed to develop advanced knowledge in a specific area of expertise. A written report is required. May be repeated for up to 6 credits.

595. Space Studies Capstone. 3 credits. The capstone course integrates, extends and applies knowledge learned in earlier Space Studies courses and reading. The major component of this course is a collaborative project interrelating policy, technology and science. This course is required by SPACE/EDUR students and should be taken during the year they plan to graduate. The course begins in the spring semester and concludes with an intensive seven-day capstone experience on the UND campus.


998. Thesis. 6 credits. S/U grading only. Prerequisite: Graduate standing in Space Studies, completion and approval of a thesis proposal. An original research project approved by and completed under the supervision of a thesis committee.

405. Advanced Space Mission Design. 3 credits.

410. Life Support Systems. 3 credits.

420. Space Science and Exploration. 3 credits.

425. Observational Astronomy. 3 credits.

436. Earth System Science. 3 credits.

455. Global Change. 3 credits.

446. Commercialization of Space. 3 credits.

505. Soviet/Russian Space Program. 3 credits.

COURSE DESIGNATIONS

Policy area courses: 440, 450, 541, 554, 555, 556, 565, 575, 577.


Special Education

(See Education: Special Education)

Speech-Language Pathology

(See Communication Sciences and Disorders)

Teaching and Learning

(See Education: Teaching and Learning)
Theatre Arts

Professors Burgess, Cutler (Graduate Director), Gillette, McLennan (Chair) and Williams

Program Description

The Department of Theatre Arts offers graduate study leading to a Master of Arts degree. The Master of Arts program is designed to prepare students for either a Master of Fine Arts degree or a Ph.D. The program is individualized so that the student may select a special area of emphasis such as directing, design and technical theatre, playwriting, dramatic literature, feminist theatre, cultural studies, or history. Coursework emphasizes both the practical and theoretical aspects of the discipline. An active production schedule provides students with opportunities in all areas of performance, directing, and technical theatre.

Admission Requirements

1. Twenty-three credits of undergraduate coursework in theatre, drama, or a related discipline.
2. If previous academic work is judged deficient, certain courses may be required by the department, without graduate credit, as a condition of admittance.

Degree Requirements

1. The following are required:
   Thea 501 Seminar in Dramatic Literature 6 credits
   Total ............................ 8 credits
2. Minimum of six credit hours in the production areas, i.e., Acting, Directing, and Design and Technical Theatre courses.
3. Minimum of six credit hours in the theory areas, i.e., Playwriting, Literature (except those listed in 1 above), Criticism, and History courses.
4. All students must take a written comprehensive examination before enrolling in Thea Thesis 998. The content of the examination will be determined by the Graduate Faculty of the department and will be given at a time announced by the department. The examination shall cover the field of knowledge in Theatre Arts and coursework completed by the student.

Courses

501. Seminars in Theatre Arts 1 to 3 credits, repeatable. Seminars in Dramatic Theory, Theatre History, Dramatic Literature, Performance Theory, Oral Interpretation, Children’s Theatre, and topics of special interest to faculty and students on the graduate level.
502. Seminar in Dramatic Production and Criticism 3 credits. Prerequisite: consent of instructor.
503. Dramatic Theory and Criticism I 3 credits. Historical survey of critical thinking of the drama as performance from Aristotle to late 19th century. Emphasizes differing perspectives on dramatic theory and criticism through time. F/O
525. Period and Style in Dramatic Production 3 credits. Prerequisite: Theatre 425 or equivalent. Study of a wide variety of production styles in the staging of dramatic literature from Aeschylus to the present.
537. Graduate Co-op Education 1-4 credits.
595. Research Problems in Theatre 1 to 3 credits. Prerequisite: consent of instructor. Individual study under the direction of the graduate faculty.
336. Lighting for Stage II 2 credits.
339. Production Design 3 credits.
402. Acting III 3 credits.
404. Acting for the Music Theatre 3 credits.
415. Selected Problems in Theatre Arts 1 to 3 credits.
422. American Theatre History 3 credits.
423. History of the Theatre: Classical, Medieval, and Renaissance 2 credits.
424. History of the Theatre: Seventeenth Century to the Present 3 credits.
425. Play Direction II 3 credits.

Visual Arts

Professors Byun, Fink, Fundingsland, Luber, Mc Cleery, Miller, Monsebroten, Paulsen and Spiteri (Graduate Director)

Program Description

The Master of Fine Arts degree program in Art is a strongly studio-oriented professional preparation in the media areas of ceramics, drawing, metalsmithing, painting, printmaking, sculpture, and mixed media. Within and outside the visual arts areas there is ample opportunity (and encouragement) for balanced study in art history and supporting media and disciplines, including computer/digital media.

Admission Requirements

1. Admission to Approved Status requires a BA or BFA degree (at least 105 quarter or 70 semester hours in studio courses plus a minimum of 15 semester hours in art history) from a regionally accredited college or equivalent.
2. Twenty (20) color slides (2” x 2” cardboard or plastic mounted) of representative examples of the student’s recent work. The slides should be submitted to the Art Department Graduate Committee and accompanied by a list containing their sequence, titles, size and medium.
3. For students who have earned graduate credit in art or hold an MA degree, a maximum of 15 credits may be accepted towards the MFA degree. Of those 15 credits, up to 6 credits in Art History may be accepted towards the 9 credit art history requirement.

Degree Requirements

1. The program consists of 60 credits in the following areas:
   Media, or Sculpture) 30 credits
   New Media, Metalsmithing, Printmaking, Mixed Media, or Sculpture) 30 credits

Electives (including at least 12 credits in art) 18 credits
Professional Exhibition 3 credits

2. Formal review of the M.F.A. candidates work will be conducted by the appropriate faculty at the end of the student’s second and third semesters of the graduate program.
3. Prerequisites to graduation include:
   a. Preparation and presentation of a Graduation Exhibition, which will be a formal presentation of creative work.
   b. An exhibition catalog which will include an artist’s statements and reproductions of the work.
   c. A slide portfolio of the Graduation Exhibition must be submitted to the Art Department for its permanent files.
   d. Successful completion of Art 510.

Residence Requirement. The M.F.A. degree requires at least two semesters, or one semester and two summer sessions taken within a three year period, in residence.

Professional Exhibition All M.F.A. candidates are required to register for Art 599—Professional Exhibition (three credits). The intention is to give candidates a summary experience as they near the end of their formal training which will serve as a benchmark in their career development. The presentation and format of the catalog may
vary with what the candidate and committee deem appropriate and complimentary to the work to be presented in the exhibition. The artist’s statement may include such things as a critical statement on the candidate’s work, its development, its cultural, philosophical and historical context, and/or reference to the artist’s procedures and techniques.

Candidacy for the Degree. Admission of a student to the Graduate School as a degree student in Approved Status implies only that the student has met the minimum entrance requirements and will be permitted to take graduate courses which normally may be expected to lead to a degree. The student has not been admitted as a candidate for a degree. Advancement to candidacy is granted only after the completion of specific requirements and upon the recommendation of the faculty advisory committee. Candidates for the M.F.A. degree will not be permitted to graduate in the same semester or summer session in which they are advanced to candidacy.

Students in Approved Status may be advanced to candidacy for a M.F.A. degree when they have satisfied the following requirements in approximately the following sequence:

1. Completion of the first departmental comprehensive evaluation. During the course of study, all M.F.A. students will be evaluated twice and recommendations will be made regarding continuation in the degree program. The first evaluation, held near the end of the second semester, is conducted by a committee of three members from the Graduate Faculty of the Art department. After formal review of the student’s work, the committee prepares a written summary of the results of the evaluation and a recommendation regarding the continuance of the student. A copy of the evaluation is sent to the Graduate School.

2. Program of Study should normally be approved no later than the beginning of the third semester of enrollment.

3. Completion of a substantial portion of the course work for the degree with an overall GPA of no less than 3.00.

4. Completion of the second formal departmental comprehensive evaluation prior to the end of the semester preceding the semester in which the student expects to graduate (normally the third semester in residence). The evaluation will be conducted by the student’s faculty advisory committee and will consist of a review of the student’s progress toward completion of degree requirements, and a review of plans for the professional exhibition. The results of the evaluation will be filed with the Graduate School and will include a recommendation regarding advancement to candidacy for the M.F.A. degree.

5. Recommendation to the dean of the Graduate School for advancement to candidacy by the faculty advisory committee.

Final Evaluation. The faculty advisory committee will examine and evaluate the student’s performance in the Professional Exhibition, and report the results to the Graduate School on the form titled “Final Report on Candidate” by the deadline specified in the Academic Calendar. The advisor and department chairperson will certify receipt of a copy of the Exhibition Catalog and a slide portfolio of the Exhibition.

Courses

501. Sculpture. 1 to 6 credits. Prerequisite: Permission of instructor. Extensive work and study in three dimensional form, media, and methods. Repeatable to 30 credits.

510. Art History: Issues in Contemporary Art. 3 credits. Examines issues in contemporary art relevant to practicing artists. Addresses current intellectual debates around the work of contemporary artists and issues relevant to artists working in a regional setting. Examines the institutional context of contemporary art practice, such as exhibitions venues and funding for professional artists.

511. History of Art: Graduate Seminar. 1 credit repeatable to 2 credits. Offered S. Explores the theoretical basis for integrated concepts and methods of critical analysis in the visual arts. The course is intended to help students become aware of the major critical perspectives of the discipline and practical issues related to careers in the fine arts. Methodological, critical, and professional projects will be completed by students in the course.

520. Painting. 1 to 6 credits. Prerequisite: Permission of instructor. Individual research and experimentation in painting. Repeatable to 30 credits.

530. Drawing. 1 to 6 credits. Prerequisite: Permission of instructor. Experimentation and elaboration in drawing skills and techniques, both innovative and traditional. Emphasis on individual explorations. Repeatable to 30 credits.

537. Graduate Co-op Education. 1 to 4 credits. Prerequisite: Graduate standing; approval of Departmental Advisor/Coordinator, with student on file with Co-op Ed. Office prior to registration, and written permission from the student’s VA graduate committee. An elective opportunity in the VA graduate program toward the MFA to participate in an apprenticeship in one’s selected field of concentration.

540. Printmaking. 1 to 6 credits. Prerequisite: Permission of instructor. Individual research and experimentation in printmaking. Repeatable to 30 credits.

550. Ceramics. 1 to 6 credits. Prerequisite: Permission of instructor. Individual instruction and experimentation in Ceramics. Repeatable to 30 credits.

560. Metalworking: Jewelry and Small Sculpture. 1 to 6 credits. Prerequisite: Permission of instructor. Exploration of historical, traditional, and innovative jewelry and small sculpture techniques using non-ferrous metals, gems, and other materials. Repeatable to 30 credits.

570. Mixed Media. 1 to 6 credits repeatable to 30. Prerequisites: Permission of instructor. Individual instruction and experimentation in mixed media.

580. Workshop. 1 to 6 credits. Prerequisite: Permission of instructor. Special emphasis and encouragement in the use of new materials. Primary course objectives are to be accomplished by bypassing traditional techniques and establishing new approaches to problem solving. Repeatable to twelve credits.

590. Individual Research. 1 to 9 credits. Research and creative experiences within a specific area of interest in the Visual Arts and emphasis on refinements of aesthetic applications of techniques and media. By permission of instructor. Repeatable to twenty-two credits.

599. Professional Exhibition. 3 credits. Prerequisite: Permission of student’s Graduate Committee. Artist statement, preparation, design, installation, and catalog of solo show.

410. History of Art: Selected Topics. 1 to 6 credits.

411. History of Art: Study of Eastern Art from Proto-Hieratic Periods to the Present. 3 credits.

412. History of Art: 20th Century. 3 credits.

414. History of Art: Contemporary. 3 credits.

415. History of Art: Museum Internship. 1 credit; repeatable to 3.

416. History of Art: Renaissance, Baroque, Rococo. 3 credits.

419. History of Art: 19th Century Art and Architecture. 3 credits.

420. History of Art: Greek and Roman Art and Architecture. 3 credits.

421. History of Art: Computer Applications. 1 credit; repeatable to 4.

422. History of Art: Computer Internship. 1 to 3 credits.

490. Individual Research/Study Projects. 1 to 6 credits, repeatable to 12.

496. Fine Arts: Symposium in the Arts. 1 to 3 credits.
Administration and Faculty

STATE BOARD OF HIGHER EDUCATION

The University of North Dakota is a part of the North Dakota University System consisting of ten publicly supported colleges and universities and one branch campus. The State Board of Higher Education is constitutionally responsible for the management of the University and is final authority in all matters affecting the University, except for that jurisdiction over its financial, educational, and other policies, and its relations with the state and federal governments. Certain administrative responsibilities of the Board have been delegated to the Chancellor of Higher Education. The Board entrusts the execution of its plans and policies, together with the internal governance and administration of the University, to the President and the faculty and such other officers as it may select. Board members are appointed for four-year terms.

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NON-VOTING FACULTY MEMBER, named annually to one-year term

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Other administrators reporting to the Provost:

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WILBUR STOLT, M.L.S., Director, Libraries

STACIE VARNSON, Ph.D., Director, Summer Sessions

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BRUCE G. PITTS, M.D., Associate Dean and Director of Health Education, Southeast Campus, Fargo, and Director, Graduate Medical Education

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MARGARET MYERS, B.S. B.A., Assistant Vice President

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JAMES UHLIER, Director, Auxiliary Services

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LILLIAN ELSINGA, M.A., Associate Vice President for Student Services and Dean of Students

JAMES SCHAFFER, Ph.D., Associate Vice President for Outreach Services and Dean of Outreach Programs

VACANT, Assistant Dean, Outreach Programs

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TANYA NORTHAGEN, Administrative Secretary, Vice President for Student and Outreach Services Office

DAWN BOTSFORD, M.S., Special Projects Coordinator, Vice President for Student and Outreach Services Office

BARRY BRODE, M.S., Director, Television Center and Northern Lights Public Radio

JERRY BULISCO, M.A., Director, Judicial Affairs and Crisis Programs

LIBA BURGER, M.A., Director, Student Academic Services

GALEN CARVEAU, B.S., Director, Work Force Development

M.C. DIOO, M.Ed., Director, Multicultural Student Services

ODELLA FUQUA, M.B.A., CPA, Director, Financial Management, Outreach Services Office

DEB GLENNEN, M.Ed., Director, Disability Support Services

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ROBIN HOLDEN, M.A., Director, Student Financial Aid

LEIGH JEANOTTE, Ed.D., Director, Native American Programs

HEID PIPKENHAN, M.S., Director, Admissions

LYNETTE KREINELKA, M.S., Director, Distance Degree Programs

KAY MENSICK, Director, Women's Center

ILLINOIS COLLEGE, B.S., Administrative Officer, Vice President for Student and Outreach Services Office

KENTON PAULS, B.B.A., Director, Enrollment Services

NEIL REUTER, M.S., Specialist in Counseling and Student Personnel, Director, TRIO Programs

CHERYL SAUNDERS, Ph.D., Director, University Learning Services

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TONY TRIMARCO, B.S., Director, Memorial Union

FRED WITTMAN, M.S., Director of Project Development/Assistant to the Vice President

VACANT, Director, Counseling Center

PETER ALFONSO, Ph.D., Vice President for Research

WILL GOOSNELL, Ph.D., Director, Research, Office of Research and Program Development

DAVID O. SCHMIDT, B.S.B.A., Manager, Grants and Contracts Administration
FACULTY

This list is intended for general public information purposes only and must not be construed as an official or definitive list of faculty members and their tenure or other status. Also, because the number and locations of clinical faculty in the School of Medicine vary with the departmental appointments, only full-time medical faculty are listed. A listing of clinical faculty may be obtained from the school on request.

* associate graduate faculty status
** full graduate faculty status
*** adjunct graduate faculty status

A

ABBOTT, DAVID W., Associate Professor of Neuroscience; M.D., Tulane University

ABRAMSON, HARMON B., Professor and Chairperson of Chemistry; Ph.D., Massachusetts Institute of Technology

AHNER, JANET, Professor of Educational Foundations and Research; Ph.D., University of Missouri

AHMAD, IQBAL, Adjunct Assistant Professor of Pharmacology, Physiology and Therapeutics; Ph.D., Kent State University

ALLEN, JON W., Associate Professor of Internal Medicine; M.D., University of North Dakota

ALLEVA, PATTI A., Professor of Law; J.D., Hofstra University School of Law

AMES, FORREST E., Associate Professor of Mechanical Engineering; Ph.D., Stanford University

AMUNDSON, MARY, Assistant Professor, Center for Rural Health; M.A., University of North Dakota

ANDEREGG, MICHAEL A., Chester Fritz Distinguished Professor of English; Ph.D., Yale University

ANDERSON, CHRISTOPHER, Professor of Music; Ph.D., Duke University

ANDERSON, CINDY, Clinical Associate Professor of Nursing; M.S., University of North Dakota

ANDERSON, JULIE, Assistant Professor of Nursing; Ph.D., University of North Dakota

ANDERSON, SHAUNA, Adjunct Assistant Professor of Pathology; Ph.D., University of Washington

ANDRES, ROBERT, Associate Professor of Space Studies; Ph.D., Michigan Tech University

ANTES, JAMES R., Professor of Psychology; Ph.D., Iowa State University

ANTONENKO, DAVID R., Professor and Chairperson of Surgery; Ph.D., M.D., University of Alberta

ASKELSON, MARK, Assistant professor of Atmospheric Sciences; M.S., University of Oklahoma

ASKIM, MARY KAY, Assistant Professor of Marketing; Ph.D., Purdue University

ATKINSON, MICHAEL, Associate Professor of Occupational Therapy; Ph.D., University of Minnesota

AUSTIN, CHRISTOPHER, Assistant Professor of Biology; Ph.D., University of Texas at Austin

B

BAGHERI, FATTOHLLAH, Associate Professor of Economics; Ph.D., University of Pennsylvania

BAKER, JEROME, Assistant Professor of German-Languages; Ph.D., University of Minnesota

BALDWIN, GAYLLI, Assistant Professor of Philosophy and Religion; Ph.D., Marquette University-Milwaukee

BALLINTINE, THOMAS A., Assistant Professor of Chemistry; Ph.D., Southern Illinois University

BANDYOPADHYAY, BISWANATH P., Professor of Mechanical Engineering; Ph.D., People’s Friendship University, Moscow

BANERJEE, ANAMITRO, Assistant Professor of Chemistry; Ph.D., University of Maryland

BARRETTE, CARL, Associate Professor of Humanities; D.A., Idaho State University

BARRETTE, SHELBY, Associate Professor of Teaching and Learning; Ed.D., University of California-Los Angeles

BASS, GAIL S., Instructor of Occupational Therapy; M.S., University of North Dakota

BATA, LINDA, Assistant Professor of Law; J.D., University of North Dakota

BATEMAN, CONNIE RAE, Assistant Professor of Marketing; D.B.A., University of North Dakota

BEAL, JAMES R., Assistant Professor of Family Medicine; Ph.D., University of North Dakota

BEARD, MICHAEL, Chester Fritz Distinguished Professor of English; Ph.D., Indiana University

BEARD, VICTORIA, Associate Professor of Accounting and Business Law; Ph.D., University of North Dakota

BEAVER, FRANK P. E., Assistant Professor of Geology and Geological Engineering; Ph.D., University of North Dakota

BENEDA, NANCY L., Assistant Professor of Finance; Ph.D., St. Louis University

BENNETT, ROBERT, Assistant Professor of Psychology; Ph.D., Auburn University-Alabama

BENOIT, JOSEPH N., Graduate Dean and Professor of Pharmacology, Physiology and Therapeutics; Ph.D., University of South Alabama

BENOIT, VIRGIL, Associate Professor of Languages; Ph.D., University of Minnesota

BERG, CAROL, Assistant Professor of Nursing; M.S., University of Arizona

BERG, FRANCES M., Adjunct Professor of Community Medicine; M.S., University of Minnesota

BERGER, ALBERT, Associate Professor of History; Ph.D., Northern Illinois University

BERNE, JANE, Associate Professor of Languages; Ph.D., University of Illinois at Urbana-Champaign

BEVELACQUA, ANTHONY, Assistant Professor of Mathematics; Ph.D., University of Kentucky

BIBEL, GEORGE, Professor of Mechanical Engineering; Ph.D., Case Western Reserve University-Cleveland

BIBERDORF, PEGGY, Clinical Instructor of Communication Sciences and Disorders; M.S., Minot State University

BIEDERMAN, DANIEL, Professor of Economics; Ph.D., University of Kansas

BILLINGS, DAVID, Assistant Professor of Family Medicine; M.D., Michigan State University

BIRGER, C. JUDITH, Clinical Instructor of Statewide Psychiatric Nursing Education Program at Jamestown College of Nursing; M.S., University of North Dakota

BJERKE, ELIZABETH, Assistant Professor of Aviation; M.B.A., University of North Dakota

BJERKE, MARYLIN R., Clinical Assistant Professor of Nursing; M.S., University of North Dakota

BLACKBURN, ROYCE, Assistant Professor of Music; M.M., University of Northern Texas

BLACKWELL, J. LLOYD III, Professor of Economics; Ph.D., Georgia State University

BLAHI, TAMMY L., Associate Professor of Social Work, Ph.D., Southern Illinois University at Carbondale

BLANE, MICHAEL J., Associate Professor of Music; M.Ed., University of North Dakota

BLERM, JULIE A., Associate Professor of Internal Medicine; M.D., University of North Dakota

BOCK, MARJORIE, Associate Professor of Teaching and Learning; Ed.D., University of Kansas

BOPRY, JEANETTE, Assistant Professor of Instructional Design and Technology; Ph.D., Indiana University

BORG, KURT E., Assistant Professor of Pharmacology, Physiology and Therapeutics and Director, Academic Learning Center; Ph.D., North Carolina State University

BOUCHER, ALVIN O., Adjunct Assistant Professor of Family Medicine; J.D., University of New Mexico

BRAATHESEN, SANDY, Assistant Professor of Information Systems and Business Education; Ph.D., University of Minnesota-St. Paul

BRACE, LARRY, Adjunct Associate Professor of Pathology; Ph.D., University of Illinois-Chicago

BRADLEY, APRIL, Assistant Professor of Psychology; Assistant Professor of Psychology; M.S., University of Texas

BRADLEY, DAVID S., Assistant Professor of Microbiology and Immunology; Ph.D., University of South Dakota School of Medicine

BRIDEWELL, JOHN, Associate Professor of Aviation; MDiv, Southern Baptist Theological Seminary

BRINKERT, RONALD, Professor and Chairperson of Physical Education and Exercise Science; Ph.D., University of Oregon

BROSSEAU, JAMES D., Associate Professor and Chairperson of Community Medicine and Clinical Associate Professor of Internal Medicine; M.D., University of Minnesota

BROWN, AN, Assistant Professor of Pathology; M.D., University of North Dakota

BROWN, MICHAEL R., Assistant Professor of Surgery; M.D., University of North Dakota School of Medicine and Health Sciences

BROWN-BORG, HOLLY, Associate Professor of Pharmacology, Physiology and Therapeutics; M.D., North Carolina State University
HEITKAMP, THOMASINE,  
HARTMAN, JOSEPH H.,  
HEUER, LORETTA,  
HEMMASI, MOHAMMED,  
HIKENS, JAMES,  
HOFFMANN, MARK R.,  
HU, WEN-CHEN,  
HOMANDBERG, GENE,  
HASKINS, JAMES P.,  
HANSEN, MARGIE, Clinical Associate Professor of Family and Community Nursing; Ph.D., University of North Dakota  
HANSON, DARDHE, Clinical Associate Professor of Nursing; M.S., University of North Dakota  
HARGREAVES, JAMES, Associate Professor of Internal Medicine and Clinical Associate Professor of Community Medicine; D.O., College of Osteopathic Medicine and Surgery, Des Moines  
HARMESON, PHILLIP, Associate Professor of Accounting and Business Law; J.D., University of North Dakota  
HART, J. PATRICK, Adjunct Professor of Community Medicine and Rural Health; Ph.D., University of Oklahoma  
HART, JOSEPH L., Assistant Professor of Geology and Geological Engineering; Ph.D., University of Minnesota  
HASHELTON, JAMES R., Assistant Professor of Pharmacology, Physiology and Pharmacotherapy; Ph.D., University of Miami at Coral Gables  
HASKINS, JAMES P., Assistant Professor of Finance; Ph.D., Colorado State University  
HEALEY, MARGARET, Associate Professor of Educational Leadership  
HECKMAN, DAVID, Assistant Professor of Electrical Engineering; Ph.D., University of Arizona  
HEIDRICK, MARGARET L., Adjunct Associate Professor of Pharmacology, Physiology, and Therapeutics; Ph.D., University of Nebraska  
HEITKAMP, THOMASINE, Professor of Social Work; M.S.W., University of Wisconsin-Madison  
HELGROISEN, STEVEN D., Associate Professor of Community Medicine and Rural Health, M.D., MPH, University of Washington  
HELGROISEN, DIANE, Associate Professor of Nursing; M.S., University of North Dakota  
HELGROISEN, LARS, Associate Professor of Teaching and Learning; Ph.D., University of California-Los Angeles  
HERAMAD, MOHAMED, Professor and Chairperson of Geography; Ph.D., Indiana University  
HEUER, Loretta, Associate Professor of Nursing; Ph.D., University of North Dakota  
HICKENS, JAMES, Professor of Communication, Ph.D., University of Texas at Austin  
HILL, STEVEN, Associate Professor of Neuroscience; M.D., University of North Dakota School of Medicine and Health Sciences  
HILL, THOMAS M., Professor of Microbiology and Immunology; Ph.D., University of Colorado Health Sciences Center  
HILLTNER, ARTHUR, Professor of Accounting and Business Law; Ph.D., University of Nebraska  
HIRAMATU, MIDORI, Adjunct Professor of Pharmacology, Physiology and Therapeutics; Ph.D., Okayama University  
HOFMANN, KATHERINE, Assistant Professor of Pathology, and Director of Cytoarchitectural Program, B.S., University of North Dakota  
HOFMANN, MARK R., Professor of Chemistry; Ph.D., University of California  
HOLDEN, VICTORIA, Associate Professor of Communication; Ph.D., University of Minnesota  
HOLDMAN, LINDA, Assistant Professor of Teaching and Learning; Ph.D., University of North Dakota  
HOLM, JEFFREY J., Professor of Psychology; Ph.D., Ohio University  
HOLTEN, RONALD, Assistant Professor of Industrial Technology; Ph.D., Iowa State University  
HOLZMAN, GREGORY, Associate Professor of Community Medicine and Family Medicine; M.D., University of Florida-Gainesville  
HOMANDBERG, GENE, Professor and Chair of Biochemistry and Molecular Biology, PhD, University of South Dakota-Vermillion  
HOUDER, SHEHERYL, Assistant Professor of Educational Leadership; Ed.D., University of North Dakota  
HUSTOSTON, EVA, Assistant Professor of Counseling and Social Work; Ph.D., University of Wisconsin-Madison  
HU, WEN-CHEN, Assistant Professor of Computer Science; Ph.D., University of Florida  
HUANG, LUKE HANMIN, Assistant Professor of Industrial Technology; M.S., Iowa State University  
HUANG, XIAOZHAO, Associate Professor of English; Ph.D., Ball State University  
HUBER, JAY, Assistant Professor of Family Medicine; D.O., Texas College of Osteopathic Medicine  
HURESKY, Eileen, Associate Professor of Nursing; Ed.D., University of Kansas  
HUFFMAN, TERRY, Associate Professor of Sociology; Ph.D., Iowa State University  
HUMIE, WENDELIN, Assistant Professor of Sociology-Criminal Justice; M.A., Sam Houston State University  
HUNT, CURTIS D., Adjunct Associate Professor of Anatomy and Cell Biology; Ph.D., University of North Dakota  
HUNTER, SUSAN L., Associate Professor of Nursing; M.S., University of Texas at Austin  
HURLBURT, KAREN S., Assistant Professor of Teaching & Learning; Ph.D., University of North Dakota  
HURLEY, ROXANNE, Clinical Assistant Professor of Nursing; M.S., University of North Dakota  
IDE, BETTE, Professor of Nursing; Ph.D., University of Arizona  
IAMS, JOEL, Associate Professor of Mathematics; Ph.D., Colorado State University  
IAMS, MICHELE, Assistant Professor of Mathematics; Ph.D., University of North Dakota  
INGWALSON, GAIL, Assistant Professor of Teaching and Learning; Ph.D., University of North Dakota  
ISEMINGER, GORDON L., Chester Feltz Distinguished Professor of History; Ph.D., University of Oklahoma  
ISZLER, DONNA, Clinical Associate Professor of Statewide Psychiatric Nursing Education Program at Jamestown, College of Nursing, M.A., North Dakota State University  
IVERSON, DIANNE, Assistant Professor of Pathology; M.D., University of North Dakota  
JACKSON, JON A., Assistant Professor of Anatomy and Cell Biology; Ph.D., University of North Dakota  
JACOBS, KATHERINE, Adjunct Instructor of Theatre Arts; M.F.A., Tulane University  
JAFRI, SYED, Assistant Professor of Internal Medicine; M.D., Dow Medical College, University of Pakistan  
JEDLICKA, JANET, Associate Professor of Occupational Therapy; Ph.D., University of Mississippi  
JENDRYSIK, MARK, Associate Professor of Political Science and Public Administration; Ph.D., University of North Carolina at Chapel Hill  
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JENS, SUSAN H., Assistant Professor of Physical Therapy; Ph.D., University of North Dakota  
JENSEN, JASON, Assistant Professor of Political Science; Ph.D., University of Kentucky  
JENSEN, MARK O., Professor of Surgery; M.D., University of Minnesota School of Medicine  
JENSEN, WARREN C., Assistant Professor of Aviation; M.D., University of California, San Francisco-School of Medicine  
JERATH, SUKHVASH, P.E., Professor of Civil Engineering; Ph.D., University of Illinois  
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JOHNSON, BEVERLY, Associate Professor of Physical Therapy; M.S., University of North Dakota  
JOHNSON, GEORGE M., Professor of Pediatrics; M.D., University of Washington  
JOHNSON, MATTHEW, Assistant Professor of Psychology; ABD, University of California at Los Angeles  
JOHNSON, STEPHEN B., Associate Professor of Space Studies; Ph.D., University of Minnesota-Minneapolis  
JOHNSON, WILLIAM T., Adjunct Assistant Professor of Biochemistry and Molecular Biology; Ph.D., University of North Dakota  
JONES, ARTHUR F., Professor of Ast.  
JOHNSON, WALTER, Associate Professor of Geology; Ph.D., University of Iowa  
JUETEN-SMITH, CINDY, Associate Professor and Chairperson of Counseling; Ph.D., University of California, Santa Barbara  
KALBIELESCHE, PAMELA J., Professor and Director, School of Communication;  
KAPCOS, JOHN M., CPT, United States Army and Assistant Professor of Military Science and Leadership; B.S., Park University  
KELCH, ANNE, Assistant Professor of History; Ph.D., Texas A&M University  
KELCH, STEVEN, Associate Professor of Biology; Ph.D., Texas A&M University  
KENNEY, LYNDA, Assistant Professor of Industrial Technology, M.A., University of North Dakota
MARSH, RON, Assistant Professor of Computer Science; Ph.D., North Dakota State University
** MARSHALL, DAVID F., Professor of English; Ph.D., New York University
** MARSHALL, DOUGLAS, Assistant Professor of Aviation; J.D. Hastings College of Law
** MARTIN, ELIZABETH, Assistant Professor of Aviation;
** MARTTOL, JOHN T., Professor of Pediatrics and Pharmacology, Physiology and Therapeutics; M.D., Jefferson Medical College-Philadelphia
** MATHENY, RONALD K., Associate Professor of Geology and Geological Engineering; Ph.D., Arizona State University
** MAURY, DEBRA, Assistant Professor of Languages-Spanish; Ph.D., University of California, Berkeley
** MAZER, ROY, Assistant Professor of Sociology; ........
** McBride, ROSEANNE, Assistant Professor of Family Medicine; Ph.D., University of North Dakota
** McCARTHY, JOHN, Professor of Educational Leadership; Ph.D., Florida State University
** McCLEARY, VIKKI L., Assistant Professor of Pharmacology, Physiology and Therapeutics; M.D., University of North Dakota
** McCleery, KATHRYN, Professor of Art; M.F.A., Michigan State University
** MAGDON, JAK, Associate Professor of Psychology; Ph.D., University of South Dakota
** McIntyre, SUSAN, Assistant Professor and Chairperson of Occupational Therapy; M.S., University of North Dakota
** McENNIS, JAMES J., Professor of English, Ph.D., University of Notre Dame
** MCLAUGHLIN, CRAIG A., Assistant Professor of Space Studies; Ph.D., University of Colorado
** McLENNAN, KATHLEEN, Associate Professor and Chairperson of Theatre Arts; M.F.A., University of Wisconsin
** McEVEY, JAY, Professor of English; M.A.; Syracuse University
** MEER, MARTHA, Associate Professor of English; Ph.D., Syracuse University
** MEHDI, SYED, Associate Professor of Internal Medicine; M.D., Dow Medical College, University of Pakistan
** MILLAND, HELEN, Professor of Nursing and Chairperson of Department of Professionalism and Practice; Ph.D., University of Minnesota
** MELVOLD, ROGER, Professor and Chairperson of Microbiology and Immunology; Ph.D., University of Kansas, Lawrence
** METZGER, JERRY M., Professor of Mathematics; Ph.D., University of Connecticut
** MEYER, KATRINA, Assistant Professor of Educational Leadership; Ph.D., University of Washington
** MEYER, MICHAEL E., Associate Professor of Sociology and Director of Criminal Justice Studies; Ph.D., University of Oklahoma-Norman
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