ACADEMIC CATALOG
1997-99
University of North Dakota
Grand Forks, North Dakota

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**THIS CATALOG** was published by the University of North Dakota Office of Admissions and Records, Alice Poehls, director, and the UND Graduate School, Harvey Knull, dean. Preparation and production assistance by the Office of University Relations, James Penwarden, director. Composition and paging by the University Printing Center. Printing by Custom Printing Company, Owensville, Missouri.

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*Vol. 89, Issue 4, June, 1997; USPS 476-010*
Welcome to the University of North Dakota!

This catalog is a “snapshot,” one moment in the life of a vibrant, comprehensive university. This publication contains information about UND’s structure, curriculum, academic requirements, policies and procedures, and a wealth of other topics, including the names and credentials of our faculty members. This catalog is the indispensable guidebook for all who have chosen to develop their minds and lives at North Dakota’s flagship university.

Don’t be misled by the heft and detail of the publication you are reading. Although universities are among the most enduring of society’s institutions, they are alive, dynamic and changing continuously. This is true of every one of the 92 undergraduate and 65 graduate and professional programs offered at UND. Here, you will grow in a challenging and exciting environment of excellence in scholarship and discovery.

The University of North Dakota is committed to preparing its graduates for a lifetime of change. Our students gain not only the specialized knowledge of a particular discipline but also the exposure to the liberal arts and sciences and the general body of knowledge that will prepare them for critical and creative thinking throughout their lives.

We welcome you as a full partner to the UND community — or “family,” as it is often described by those who know it best — as we anticipate the challenges of the 21st Century.

Sincerely,

Kendall L. Baker
President
### Academic Calendar (Subject to Change)*

**FALL SEMESTER**

<table>
<thead>
<tr>
<th>Event</th>
<th>1997-98 (981)</th>
<th>1998-99 (991)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning of Instruction</td>
<td>August 26</td>
<td>August 25</td>
</tr>
<tr>
<td>Last Day for Advancement to Candidacy for All Graduate Students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning to Graduate in January</td>
<td>August 26</td>
<td>August 25</td>
</tr>
<tr>
<td>Holiday, Labor Day</td>
<td>September 1</td>
<td>September 7</td>
</tr>
<tr>
<td>Last Day to Add a Full-Term Course</td>
<td>September 9</td>
<td>September 8</td>
</tr>
<tr>
<td>Last Day on Which Candidates May Apply for a Degree</td>
<td>September 23</td>
<td>September 22</td>
</tr>
<tr>
<td>Last Day for Graduate Students to Remove Incompletes</td>
<td>September 30</td>
<td>September 29</td>
</tr>
<tr>
<td>Last Day to Drop a Full-Term Course</td>
<td>November 7</td>
<td>November 13</td>
</tr>
<tr>
<td>Last Day to Change to/from S/U</td>
<td>November 7</td>
<td>November 13</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 in the Graduate School</td>
<td>November 20</td>
<td>November 19</td>
</tr>
<tr>
<td>Thanksgiving Recess</td>
<td>November 27-28</td>
<td>November 26-27</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 3</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 10</td>
</tr>
<tr>
<td>Reading and Review Day</td>
<td>December 13</td>
<td>December 11</td>
</tr>
<tr>
<td>Semester Examination Period</td>
<td>December 15-19</td>
<td>December 14-18</td>
</tr>
<tr>
<td>Winter Commencement and Official Graduation Day</td>
<td>December 19</td>
<td>December 18</td>
</tr>
<tr>
<td>Grades Due</td>
<td>December 23</td>
<td>December 22</td>
</tr>
</tbody>
</table>

**SPRING SEMESTER**

<table>
<thead>
<tr>
<th>Event</th>
<th>1997-98 (983)</th>
<th>1998-99 (993)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning of Instruction</td>
<td>January 7</td>
<td>January 5</td>
</tr>
<tr>
<td>Last Day for Advancement to Candidacy for All Graduate Students</td>
<td>January 7</td>
<td>January 5</td>
</tr>
<tr>
<td>Holiday, Martin Luther King Jr. Day</td>
<td>January 19</td>
<td>January 18</td>
</tr>
<tr>
<td>Last Day to Add a Full-Term Course</td>
<td>January 21</td>
<td>January 19</td>
</tr>
<tr>
<td>Last Day on Which Candidates May Apply for a Degree</td>
<td>February 4</td>
<td>February 2</td>
</tr>
<tr>
<td>Last Day for Graduate Students to Remove Incompletes</td>
<td>February 11</td>
<td>February 9</td>
</tr>
<tr>
<td>Holiday, Presidents' Day</td>
<td>February 16</td>
<td>February 15</td>
</tr>
<tr>
<td>Spring Recess</td>
<td>March 16-20</td>
<td>March 8-12</td>
</tr>
<tr>
<td>Last Day to Drop</td>
<td>March 27</td>
<td>March 26</td>
</tr>
<tr>
<td>Last Day to Change to/from S/U</td>
<td>March 27</td>
<td>March 26</td>
</tr>
<tr>
<td>Holiday, Easter</td>
<td>April 10 &amp; 13</td>
<td>April 2 &amp; 5</td>
</tr>
<tr>
<td>Last Day to File Preliminary Approval of Thesis or Dissertation in the Graduate School</td>
<td>April 9</td>
<td>April 8</td>
</tr>
<tr>
<td>Reading and Review Day</td>
<td>April 23</td>
<td>April 22</td>
</tr>
<tr>
<td>Last day to File Preliminary Report on Degree Examinations and Independent Study Completion in the Graduate School</td>
<td>April 30</td>
<td>April 29</td>
</tr>
<tr>
<td>Semester Examination Period</td>
<td>May 4-8</td>
<td>May 3-7</td>
</tr>
<tr>
<td>Spring Commencement and Official Graduation Day</td>
<td>May 10</td>
<td>May 9</td>
</tr>
<tr>
<td>Grades Due</td>
<td>May 12</td>
<td>May 11</td>
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</table>

**SUMMER SESSION**

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<tr>
<th>Event</th>
<th>1997-98 (984)</th>
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<tbody>
<tr>
<td>Beginning of Instruction</td>
<td>May 11</td>
<td>May 10</td>
</tr>
<tr>
<td>Last Day for Advancement to Candidacy for All Graduate Students</td>
<td>May 11</td>
<td>May 10</td>
</tr>
<tr>
<td>Last Day to Add a Full-Term Course</td>
<td>May 20</td>
<td>May 19</td>
</tr>
<tr>
<td>Holiday, Memorial Day</td>
<td>May 25</td>
<td>May 31</td>
</tr>
<tr>
<td>Last Day on Which Candidates May Apply for a Degree</td>
<td>June 8</td>
<td>June 7</td>
</tr>
<tr>
<td>Holiday, Independence Day</td>
<td>July 3</td>
<td>July 5</td>
</tr>
<tr>
<td>Last Day to File Preliminary Approval of Thesis or Dissertation in the Graduate School</td>
<td>July 2</td>
<td>July 1</td>
</tr>
<tr>
<td>Last Day to Drop</td>
<td>July 10</td>
<td>July 9</td>
</tr>
<tr>
<td>Last Day to Change to/from S/U</td>
<td>July 10</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 16</td>
<td>July 15</td>
</tr>
<tr>
<td>Last day to File Final Report on Degree Examinations and Independent Study Completion in the Graduate School</td>
<td>July 23</td>
<td>July 24</td>
</tr>
<tr>
<td>Final Examination Period</td>
<td>July 30-31</td>
<td>July 29-30</td>
</tr>
<tr>
<td>Summer Commencement and Official Graduation Day</td>
<td>July 31</td>
<td>July 30</td>
</tr>
<tr>
<td>Grades Due</td>
<td>August 4</td>
<td>August 3</td>
</tr>
</tbody>
</table>

*All academic deadline dates apply to full-term, on-campus courses.
CATALOG CONTENT
NON-BINDING, SUBJECT-TO-CHANGE
STATEMENT

The State Board of Higher Education requires that the following announcement be published in all catalogs and bulletins of information issued by the state educational institutions of North Dakota: “Catalogs and bulletins of educational institutions are usually prepared by faculty committees or administrative officers for the purpose of furnishing prospective students and other interested persons with information about the institutions that issue the same. Announcements contained in such printed material are subject to change without notice; they may not be regarded as in the nature of binding obligations on the institutions, and the State. In times of changing conditions it is especially necessary to have this definitely understood.”

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 ten days 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.

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 Students Affairs in Twanmley Hall and at the Student Affairs Office in McCannel Hall (to be located temporarily in the Medical Science South Building beginning in late 1994 while McCannel Hall is being renovated).

UND STATEMENT ON INSTITUTIONAL DIVERSITY AND PLURALISM

Approved by University Senate February 4, 1993

The University of North Dakota takes pride in its mission to meet the individual and group needs of a diverse and pluralistic society through education, research, and service. The peoples served by and associated with the University vary widely; all must be valued for the richness their different cultures, heritage, perspectives, and ideas bring to the community. The University is, in part, a conduit through which individual perspectives and global interrelationships are enhanced by a learning and teaching environment that is aware of and sensitive to the diversity of its constituents. Diversity in the University is constituted by the full participation of persons of different racial and ethnic heritage, age, gender, socio-economic background, and sexual orientation; of persons with disabilities; and of people from other countries. Of particular importance is the University’s longstanding commitment to support the cultures and traditions of the American Indian people while providing learning and teaching experiences which enhance their self-determination, educational advantages, and professional opportunities. Policies and procedures of the University oblige its students, faculty, staff, and alumni to foster the awareness and sensitivity necessary for acceptance and understanding of all people in society. The University of North Dakota strongly disapproves and disavows acts of racism, sexism, bigotry, harassment, and violence in any form and actively uses its human and other resources to provide opportunities for its constituents and public to learn and appreciate the values of a diverse and multicultural world.

Also see the document titled “Diversity and Cultural Pluralism at the University of North Dakota,” a report to the UND President from the UND Diversity Steering Committee, dated September 10, 1993.

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 a 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 F. Page, Affirmative Action Officer, 101 Twanmley Hall, P.O. Box 7097, University of North Dakota, Grand Forks, ND 58202-7097; telephone 701-777-4171/TDD 777-2796. 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 (educational opportunity) or the Americans With Disabilities Act may be addressed to the Affirmative Action Officer or to the Office of Civil Rights, U.S. Department of Education, 10220 North Executive Hills Blvd., 8th Floor, Kansas City, MO 64153-1367. The ADA Accessibility Line is available to report disability access problems on campus, 777-2796 (TDD) or 777-2591 (voice).

ACCESS TO RECORDS
(FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT)

In compliance with the Family Educational Rights and Privacy Act of 1974, 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 Admissions and Records, Room 201, Twanmley Hall.

MEASLES/RUBElla IMMUNIZATION

All students attending North Dakota colleges and universities must prove immunization against measles and rubella. Students will be allowed one semester to provide this information to the Student Health Service (McCannel Hall, telephone 701-777-3963), and if it is not provided by then, further registration will not be allowed until proof of such immunization is provided.
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General Information

THE SCOPE OF THE UNIVERSITY

The University of North Dakota is a co-educational state-supported institution located in Grand Forks, a city with a population of approximately 50,000. The campus is in the center of the Red River Valley, one of the richest farming areas in the world. In addition, UND is responsible for free-standing branch campuses at Devils Lake and Williston.

The University is the oldest of the state’s 11 public institutions of higher education, enrolling a third of all students attending state four-year colleges and universities. With about 11,500 students, UND is the largest post-secondary institution in the region of the Dakotas, Montana, and western Minnesota.

The University’s academic programs are offered in 160 fields through 11 major academic units: College of Arts and Sciences, Center for Aerospace Sciences, College of Business and Public Administration, School of Engineering and Mines, College of Fine Arts and Communication, College of Nursing, College of Education and Human Development, Graduate School, School of Law, School of Medicine and Health Sciences and Division of Continuing Education.

Besides a wide array of undergraduate degrees, UND offers major work leading to the doctorate in 16 programs, to the specialist degree in one program, and to the master’s degree in 47 programs. The state’s only law and medical degree programs also are located at UND.

The campus itself includes 570 acres, 240 buildings, and 5.2 million square feet of space.

The full-time faculty and research staff numbers 624, non-instructional staff 1,900, for a total of 2,524 full-time employees (excluding the U.S. Air Force bases, UND is North Dakota’s largest public or private employer).

The University’s operating budget for the fiscal year beginning July 1, 1996, was $237 million, of which about one-fourth was expected to come from the state treasury.

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 before the end 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 of the 1990s would be recognizable to its founders. UND was the only institution of higher education in the state to be officially 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 eleven 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.

THE STUDENT BODY

The fall 1996 enrollment, 11,300, included 9,351 undergraduate students, 1,511 graduate students, 204 law and 234 medical students. About 57 percent of the on-campus students identified themselves as North Dakotans, 22 percent as Minnesotans. Non-residents represented all of the states and 44 foreign countries. About half of the students were older than age 21. Forty-nine percent were women and about 11 percent were married.

In the fall of 1996, the University enrolled 1,654 new freshmen, 741 new transfer students and 485 new graduate and graduate professional students, bringing the total number of students matriculated during its history to more than 186,000. Degrees granted during fiscal 1993-94 included 1,565 undergraduate degrees, 440 graduate degrees, and 125 graduate professional degrees, 67 law and 58 in medicine. The number of degrees granted since the first commencement in 1889 total 83,012.

MISSION OF THE UNIVERSITY

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

The University of North Dakota 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 and its branch campuses, 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. Many individual colleges, schools and departments are members of accrediting associations in their respective fields.

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 four-week, six-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 on page iv.
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, beginning on page 35, and to the listings of the departments and program areas beginning on page 58 (undergraduate) and page 176 (graduate). See also the Fields of Study summary and the index, both 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, when classes are in session.

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

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.

Event Information: Call the Info-Center at 777-4321, watch UND Television Cable Channel 3, stop at the Visitor information locations listed above, consult UND’s page on the Worldwide Web (see UNDInfo below) or write or call the Office of University Relations, 777-2731.

Home Page: A variety of information about UND can be obtained from UNDInfo, which contains events and calendar information about a broad variety of entertainment and sports schedules. It can also be used to gain access to other sources of UND information, including directories for faculty and students, statistics, news, academic catalogs, library holdings, course schedules, handbooks, and much more. UNDInfo’s address is http://www.und.edu.

Tickets: Athletic tickets available at Hays Sport Center (fieldhouse) Ticket Office, hours 8 a.m. to 4 p.m., Monday-Friday (telephone 777-2236); tickets for all athletic events can also be purchased by using Ticketmaster, telephone 772-5151, or at any Ticketmaster outlet; Barnes Hall (site of Theatre Arts Department and touring productions) Box Office open approximately two weeks prior to each performance, 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 777-4090) for information, 772-5151 to purchase tickets or visit any Ticket Master outlet.

Prospective Student Tours: Arrange by writing or calling the Office of Enrollment Services, telephone 777-4463 (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 9-911 from campus phone, 911 from other phones. The University Police Department provides statistical information upon request in accordance with the Campus Security Act of 1990.

Dining facilities: The Centennial Dining Room in the UND Memorial Union is home to the Express Express Coffee House in the mornings and late afternoons. An array of rolls, muffins and espressos are offered on the menu. From 11:30 a.m. to 1 p.m., Monday through Friday, the Centennial turns into a full-service restaurant for your luncheon needs. Snack bar and convenience store service is available from the West Bank Snack Bar & Convenience Store located in Wilkerson Hall, open 11 a.m. to 12 midnight, Monday–Sunday; subway located in Johnstone Hall next to Gamble Hall, open 11 a.m. to 11 p.m., Monday through Sunday; the North Bank Convenience Store in the lower level of Walsh Hall, open 4 p.m. to 11 p.m., Monday–Sunday; the Union Deli in the lower level of the Memorial Union, open 10 a.m. to 7 p.m. Monday–Thursday, 3 p.m. to Friday; and the Twamley Snack Bar located in Twamley Hall, open 8 a.m. to 3:30 p.m., Monday through Friday. Parents are welcome to dine in any of the four dining centers with their student Guest meal prices are available or the student may use their Passport Dollars for guests. The residence dining centers are located in Wilkerson, Smith, Squires, and the Memorial Union (Terrace). Fast food service is available from Burger King in the Memorial Union, open 7 a.m. to 7 p.m. Summer and holiday hours may vary. The North Dakota State of Art Coffee Bar on the main floor of the North Dakota Museum of Art building serves cappuccino, espresso, pastries, pies, and cookies from 9:30 a.m. to 5 p.m., Mondays through Fridays.

Parking: Visitors are always welcome on campus. You are encouraged to stop by either of our convenient locations to obtain a visitors parking permit free of charge. The Union Station is located in the lower level of the Memorial Union (9 a.m.–4:50 p.m.), and the Traffic Office is in the Auxiliary Services building on the southwest end of campus (8 a.m.–4:30 p.m.). The only restrictions that apply to visitors are those areas designated as Handicapped Zones, Service Vehicle Zones, Metered Areas, Time Zones and University Apartment and Residence Halls. Vehicles without a visitor’s permit will be ticketed; however, with the exception of the restricted areas listed above, those tickets will be waived. Simply complete the visitor’s section on the ticket by signing your name and indicating the person/department you were visiting, and mail it to the Traffic Division, Box 9035, Grand Forks, ND 58202-9035. For further information, call 701-777-3551.

Books and Memorabilia: The University Bookstore in the UND Memorial Union, the largest in North Dakota, accepts Mastercard, Visa, and Discover.

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 (telephone 777-2611, 1-800-543-8764 out-of-state).

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 information. You can learn not only about the facilities, but also about 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 counselor, to faculty members, and to students, and you can eat in campus dining facilities. When you set up an appointment for a visit to UND, we can assist you with arrangements to stay in town or on campus.

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 arrangements 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 the Office of Enrollment Services, (701) 777-4463, or write to: Office of Enrollment Services, Box 8135, Grand Forks, ND 58202.

UNIVERSITY 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 either of the following locations: Union Station (lower level of Memorial Union), Traffic Division (Auxiliary Services Building). 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, 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, 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 attendance, 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 calendar year. In the event of such a request, these data will be treated as educational records information, and in response to public inquiries the University will verify only whether an individual is currently enrolled at the University.

Educational Records

Educational records are those documents, records, other materials and files, 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, 307 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, D.C. 20202.

EXTRACURRICULAR OPPORTUNITIES

General

As a complement to classroom instruction, individual colleges and departments, residence hall, 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 is available from the Student Organization Center in the Memorial Union.

Intramural-Recreational Sports

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, co-recreational, and faculty-graduate divisions.

Sports include: aerobics, badminton, basketball, beach volleyball, broomball, flag football, 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, Intramural-Recreational Fields, Ray Richards Golf Course, and use of Grand Forks Parks and Recreation Apollo Park Softball Complex.

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

Intercollegiate Athletics

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

Educational Records

For more than half a century, UND athletic teams have been known as the “Fighting Sioux” and have used an Indian head logo as their symbol. Since the University of North Dakota ranks among the top higher education institutions in the nation with respect to the number of quality support services available to American Indian students, the variety and substance of its Native American programs, and the number and success of its American Indian alumni, it is important that the nickname and logos be acceptable to UND’s American Indian community, which includes many tribes. Surveys have indicated that the currently approved logos and the name “Fighting Sioux” are acceptable as long as stereotyped, racist or demeaning usages are avoided. The University community is committed to respect the past and present customs and traditions of the American Indian population. Further information on this subject is available from the Native American Programs Office, the Vice President for Student Affairs, the Office of University Relations, or the Athletic Department.

Religious Activities on the Campus

For more than half a century, UND athletic teams have been known as the “Fighting Sioux” and have used an Indian head logo as their symbol. Since the University of North Dakota ranks among the top higher education institutions in the nation with respect to the number of quality support services available to American Indian students, the variety and substance of its Native American programs, and the number and success of its American Indian alumni, it is important that the nickname and logos be acceptable to UND’s American Indian community, which includes many tribes. Surveys have indicated that the currently approved logos and the name “Fighting Sioux” are acceptable as long as stereotypet,
North Dakota Museum of Art

The North Dakota Museum of Art, founded in 1972, is the official art gallery of the State of North Dakota and the University of North Dakota 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 a Coffee Bar. Lectures and concerts are scheduled in the Museum on a regular basis. Located on Centennial Drive, south of Twanmey 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.

UND Witmer Art Gallery

The UND Witmer Art Gallery increases awareness, understanding, and appreciation of art and acknowledges and supports serious artists of the region by providing exhibitions and a point of purchase for their high quality, original works. It is located at 2920 5th Avenue North, two blocks north of the main campus in a two-story house that was the lifetime residence of former Arts and Sciences Dean Robert Witmer and his wife Lillian and their daughter Jean.

Among the variety of artwork displayed and available for purchase at the Witmer are stoneware, jewelry, handblown glass, photography, hand-pulled prints, paintings, works on paper, and notecards.

Gallery founder, and director since its inception in October 1990, is Sharon Webb. Special exhibits and tours are presented, and a bi-monthly newsletter is available by calling the Witmer at (701) 746-4211.

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 students, both undergraduate and graduate, have an opportunity to broaden and enrich their educational experience. Besides 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 either through University and local research agencies or through individual faculty members working within their own departments. Several of the UND research agencies and programs are involved in public service activities which provide an opportunity for faculty and students to use service data in research projects and to initiate new research studies based on the findings of the public service projects.

Financial support for research activities is provided either from University sources, such as the Faculty Research and Creative Activity Committee or the Office of Research and Program Development, or through funds provided from external agencies such as the Federal or State government, private foundations, and industry. In fiscal year 1996, $51.1 million of external support was received for sponsored program activities, of which $35.6 million was for research.

Major UND research agencies and programs include the Child Welfare Research Bureau, Bureau of Governmental Affairs, Bureau of Educational Services and Applied Research, Institute for Ecological Studies, the Social Sciences Research Institute, and the UND Energy and Environmental Research Center.

Local research agencies and programs which work with UND faculty and students include the Rehabilitation Hospital Child Evaluation and Treatment Program, the U.S. Department of Agriculture Human Nutrition Research Center, and the State of North Dakota Geological Survey.

UND is a major component of the National Science Foundation’s Experimental Program to Stimulate Competitive Research (EPSCoR) in North Dakota. The state received and matched its first EPSCoR grant in 1986, and has received continuous NSF funding since that time.

Further information on research activities can be obtained by calling the Office of Research and Program Development at 701/777-4278. See also page 18.

AWU Membership: The University of North Dakota is a member of Associated Western Universities, Inc. AWU is a consortium of more than 60 universities that directly supports the Department of Energy’s (DOE) mission to develop and maintain educational and training activities which insure that the scientific and technical needs of the energy research and development community are met. AWU provides an interface among the academic community, DOE, and its western laboratories. For information regarding AWU, contact the Office of Research and Program Development (777-4278).

THE HONORS PROGRAM

I. General

The Honors Program brings together highly capable students and dedicated faculty members in an atmosphere conducive to creative learning and intellectual exploration. The Program is intended for students with a personal interest in learning who will pursue intellectual and creative interests beyond the requirements of the particular courses in which they are enrolled. Well-qualified 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 freshman year; inquiries from interested students are welcome. 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 student programs to fit the needs and desires of individual students. In response to this relative freedom from restrictive requirements, Honors Program students are expected to demonstrate intellectual excellence in their own lines of interest, and to pursue learning beyond the usual limits. Opportunities to do so are offered in Honors colloquia, Honors tutorials, other special classes, Honors sections of regular classes, and regular courses taken in Honors mode. Most students graduate from the Program as “Scholars in the Honors Program” while taking a major in the Colleges, but the Honors Program also offers the option of majoring in Honors. The Honors Program is not merely a modification of already existing programs, but a different program with ends and means of its own.

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, colloquia, introduce students to the full range of the disciplines which make up the University.

The major 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 senior examination (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. To major in Honors, 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 respectable 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 course work encourages students to think independently, to express their thoughts clearly, 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**

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. Early in the second semester of the junior year the student must apply to the Honors Coordinator for admission to honors work. 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 not less than six and not more than fifteen. 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 499 and the title "Senior Honors." The study may be either departmental or interdepartmental. 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 meet 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 progress report 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 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.

**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 Omega Alpha** (1978) elects to membership from junior and senior medical students on the basis of their scholastic grades.

**Alpha Phi Omega** (1947) is a National Service fraternity of former Boy Scout members.

**Alpha Psi Omega** (Xi Alpha) (1981) is a national honorary dramatic fraternity for those performing a high standard of work in theatre arts.

**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.

**Beta Epsilon Pi** (1963) is the national honorary graduate fraternity for students of superior scholastic achievement in business education.

**Delta Psi Kappa** (1948) is a professional fraternity endeavoring through its elections to recognize merit in the fields of health, physical education and recreation.

**Delta Sigma Rho** (1911) limits membership to students who have distinguished themselves in public speaking activities.

**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 Theta Upsilon** (1948) 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 Honorary for Leaders in University Apartment Community (IHLUAC)** recognizes exceptional apartment leaders.

**Magna Iota** 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 Delta Phi** (1911) is an international fraternity in the School of Law.

**Phi Epsilon Kappa** (1949) is a national professional fraternity for those engaged in teaching health, physical education, and recreation.

**Phi Eta Sigma** (1929) elects to membership sophomores on the basis of high scholastic achievement as freshmen.

**Phi Lambda Theta** (1923) elects outstanding students in the Center for Teaching and Learning.

**Phi Omega Pi** (1951) aims to promote scholarship in business education.

**Phi Sigma Alpha** (1982) is an honorary society for political science and public administration.

**Pi Delta 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 Delta 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 Theta Tau International, Eta Upsilon** (1984) promotes and supports scholarship, leadership, and research in nursing.

**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 journalists.

**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.

**Upsilon Pi Epsilon** (1987) recognizes outstanding students in the field of Computer Science.
Tuition, Fees, Financial Information

TUITION AND FEES, 1996-97*  
(Per semester, 12 or more credits)**

<table>
<thead>
<tr>
<th></th>
<th>Resident</th>
<th>Minnesota</th>
<th>Contiguous States</th>
<th>Non-resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>$1,272.00</td>
<td>$1,395.00</td>
<td>$1,800.00</td>
<td>$3,034.00</td>
</tr>
<tr>
<td>Graduate</td>
<td>1,377.00</td>
<td>1,659.00</td>
<td>1,957.00</td>
<td>3,314.00</td>
</tr>
<tr>
<td>Law</td>
<td>1,482.00</td>
<td>1,659.00</td>
<td>2,114.50</td>
<td>3,595.00</td>
</tr>
<tr>
<td>Medicine</td>
<td>4,447.00</td>
<td>4,955.00</td>
<td>11,511.00</td>
<td>11,511.00</td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>2,359.00</td>
<td></td>
<td></td>
<td></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 1996-97 totaled $217.00 per semester at UND (and is included in the above table). These include the University Fee, which supports, among other functions, musical organizations, the UND Memorial Union, and intercollegiate athletics, $71.00; health fee, $53.00; student activity fees, allocated by student government for such purposes as concerts and student publications, $20.50; Memorial Union bond retirement, $7.50; McCannel Hall Renovation, $15.00; and technology fee, $50.00. The 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 for graduate students as indicated in a following section titled "Other Fees."

OTHER FEES

- Application Fee (Undergraduate).................................$25.00*
  Payable by all undergraduate students applying for admission.
- Application Fee for Graduate Students .........................$20.00*
- Application Fee for Medical Students .........................$35.00*
- Auditing Fee
  Auditing fees will be 50% of the regular, per hour tuition charge for the same course.
- 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 $150 per semester ($300 per academic year) will be charged to both undergraduate and graduate students in engineering who have completed 60 semester credits of courses which pertain to an engineering program. A program fee of $25.00 for 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*
- Graduate Student Dissertation Fee............................$70.00*
  Charged for binding and microfilming the original copy of a thesis.
- Graduate Student Copyright Fee ................................$35.00*
  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; pro-rated for part-time students) will be charged to all graduate nursing students. Family Nurse Practitioner and Anesthesia graduate students have three semesters and will be charged $1500 per academic year.

Outreach Programs Courses. (See Schedule in Division of Continuing Education section of Catalog.)

Parking Fee ........................................................................30.00**
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 $15.00 and new summer session students pay $7.50. Fees are subject to change.

Special Examination for Credit
Fee per Semester Hour ..................................................50% the regular credit hour fee

*Non-refundable

ESTIMATED YEARLY EXPENSES

The following table gives an estimate of the expenses of a single, undergraduate student residing on campus during the nine month, 1996-1997 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 Dakota</th>
<th>Minnesota</th>
<th>Contiguous States</th>
<th>Non-resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and Fees*</td>
<td>$2,544.00</td>
<td>$2,790.00</td>
<td>$3,600.00</td>
<td>$6,068.00</td>
</tr>
<tr>
<td>Room and Board**</td>
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<td>2,910.00</td>
<td>2,910.00</td>
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<tr>
<td>Books and Supplies</td>
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<tr>
<td>Personal Expenses</td>
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<td>1,800.00</td>
<td>1,800.00</td>
<td>1,800.00</td>
</tr>
<tr>
<td>Total Estimated Cost</td>
<td>$7,754.00</td>
<td>$8,000.00</td>
<td>$8,810.00</td>
<td>$11,278.00</td>
</tr>
</tbody>
</table>

**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 less than 18 years of age whose custodial parent or guardian has been a legal resident of North Dakota for 12 months immediately prior to the beginning of the academic term;
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 dependent child whose parent or guardian has been a legal resident of North Dakota for 12 months immediately prior to the beginning of the academic term or resides in the state with the intent to establish residency in the state for a period of years (Applicant must be claimed as a dependent on the parent or guardian’s most recent federal tax return); and
4. A person who graduated from a North Dakota high school within 6 years immediately prior to the beginning of the academic term;
5. 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);
6. A spouse or dependent of 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);
7. A dependent of an instructor who lives in North Dakota and teaches in any institution of higher education in the state (instructor with faculty or equivalent professional status);
8. The spouse of any person who is a resident for tuition purposes;
9. 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 Coordinating Commission, 901 Capitol Square Building, 550 Cedar Street, St. Paul, MN 55101. Reciprocity applications are available at the Office of Admissions and Records. 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 Alaska, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, 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 1996-97 would have totaled $3,600 instead of the normal $6,068 in non-resident tuition and fees for that year.

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 federal regulations and North Dakota State Board of Higher Education policy.
2. The statutory pro-rata refund calculation defined in the Higher Education Amendments of 1992 and implementing regulations as modified is adopted as the state refund policy in accordance with State Board Policy 830.6 and detailed in the term Time Schedule of Classes.
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 discipline.
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 830.6 (#6).

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.

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 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 Financial Aid Office.

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 supplement 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 determining 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 every effort will be made to provide adequate financial aid. To offer maximum assistance, awards often are made in the form of a financial 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. Employment 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 several 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 allocated to individual University departments. Financial need is not a requirement.

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

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 Veterans’ Services office on campus.

Information concerning Head Resident, Resident Assistant, Cooperative Education Program, and/or departmental internships is available by contacting individual departments responsible for selection.

Loans. Student loan funds can be categorized into two classifications: long and short term loans. Long term loans are generally low interest loans administered by the federal Department of Education. Interest rates, eligibility, repayment terms, deferment, and cancellation 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 Student Loan, Primary Care Loan, Health Education Assistance Loan, Student Educational Loan Fund. A more complete listing of private loans is available at the Financial Aid Office.

Federal requirements insist all first time borrowers must attend an Entrance Loan Counseling session prior to receiving loan funds. Exit Loan Counseling is also required at the time a student graduates or terminates enrollment at the University. Federal regulations also require multiple disbursements and a 30-day delayed disbursement policy for first-year, first-time borrowers.

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-term loan at a time. 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 rank in the upper ten percent of their graduating class and who have ACT scores commensurate with this rank. Graduating class rank is normally based on seven semesters of high school work. Transfer students and returning UND undergraduate students receiving 4.0 (straight A) averages are awarded scholarships first, and the rest of the scholarships are awarded to students with the next lower grade point average until all of the money is exhausted.

UND awards a maximum of $2,500 in scholarship assistance per recipient each year from all University funds including academic departments, the Student Financial Aid Office and the UND Foundation.

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.

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.

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). For more information or an application, contact the Student Financial Aid Office.

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 1996-97 school year, grants range from $400 to $2,470. 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 deadline. 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 assure that your FAFSA will be received by the State Grant Program and be considered as an application for the Program, you must list at least one eligible North Dakota college code on the FAFSA. The deadline for priority consideration is April 15. For 1996-97 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 award-
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. April 15 is the priority deadline 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. Late applicants, 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 funds.

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 15 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 Social Security Administration, Veterans Administration or other agencies 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 required 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 incorrect information will have to be repaid. Any person who intentionally makes false statements or misrepresentations on a Federal financial aid application is violating the law and is subject to a fine or imprisonment or both, under provisions of the U.S. Criminal Code.

Transfer Students. Students who previously attended another post-secondary college or university must have on file at the UND Student Financial Aid Office a Financial Aid Transcript to document financial aid information from the school(s) previously attended. This form is required even if the student did not receive financial aid at the previously attended school. These forms are available at the UND Student Financial Aid Office. Failure to comply may result in withholding of aid.

Satisfactory Academic Progress for Financial Aid Eligibility. To be eligible to receive financial aid, students must meet the following minimum academic standards as established by the University. 1) Academic standards: students classified as juniors or seniors, and students who have attended UND for two or more academic terms (4 semesters or more) must have a minimum cumulative grade point average of 2.00. All other undergraduate students who meet the University’s minimum academic standards as defined in the UND Undergraduate Bulletin 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; and 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 withdraws from the institution. If withdrawal is on or after the first day of classes, the institution will determine the overpayment to be repaid based on the last day of documented class attendance according to a federal formula on a prorated basis. For specific details, contact the UND Student Financial Aid Office.

Access to Records. In compliance with the Family Educational Rights and Privacy Act of 1974, 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 Admissions and Records, Room 201, Twamley Hall.
University Services

UNIVERSITY HOUSING AND DINING SERVICES

Student living facilities at the University of North Dakota include University residence halls, single student apartments, family housing apartments, and a mobile home park.

Dining Services

The University has four dining centers serving meals on a contract basis (board is required in all residence halls). They are located in the three hall complexes — Wilkerson, Squires and Smith. The fourth, the Terrace Dining Center, is located on the lower level of the Memorial Union. Terrace provides services to students living in Swanson Hall and those living off-campus who want to eat in a dining center. Off-campus students may acquire a board contract. These students will be able to eat at any of the four dining centers.

Full Service Dining is available at the Centennial Dining Room. The Centennial is found on the lower level of the Memorial Union.

Snack Bars or fast food dining are available at Burger King, located on the main level of the Memorial Union, the Union Deli, located on the lower level of the Memorial Union, the Twamley Snack Bar, located on the fourth floor of Twamley Hall, the Subway, located in Johnstone Hall, and the West Bank Convenience Store/ Snack Bar located in the Wilkerson Complex.

Private dining rooms and banquet services are also available for students, faculty, groups and others associated with the University. Contact the Campus Catering Office (777-2256) or the Director of Dining Services (777-3823) for further information. See page 3 for additional visitor information.

University Residence Halls

University residence halls are designed to provide a comfortable living environment for students while they are enrolled in the University and to promote the personal and social development of students through group living. Each residence hall has a hall director who is assisted by resident assistants. Each hall elects its own hall council which promotes a program of social, educational and recreational activities. Complete information may be obtained by writing to the Housing Office, University of North Dakota, Box 9029, Grand Forks, ND 58202-9029.

Applications: Applications are sent, on request, from the Enrollment Services Office or the Housing Office. Assignments are made in accordance with the established priority system which is determined by the date of the receipt of the $25 nonrefundable 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 semesters) or for the entire summer session. The student 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 State Board of Higher Education. The cost of a double room with a 19-meal board plan was $2,970 for the 1996-97 academic year. Room and board rates are revised annually and are subject to change.

A student vacating his or her assigned quarters before the end of his or her contract period without written consent from the Associate Director of Residence Halls will be held responsible for the entire charges of the contracted period. 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. Only enrolled University students may live in UND residence halls.

Facilities: All residence halls meet modern standards of health, fire and sanitation. Furnishings include study desks, single beds (mattresses are 36" x 80"), dressers, chairs and drapes. Laundry facilities and mail service are also provided. Students are required to furnish their own bed linen, blankets, study lamps, towels, bedspreads, and pillows. Telephone lines are provided; however, the student is required to bring their own phone.

University Apartments

The University maintains several hundred apartments for families and single students along with a lot for privately owned mobile homes. Applications and information about the specific types of apartments and current rates is available from the Housing Office, University of North Dakota, Box 9029, Grand Forks, ND 58202-9029. Rental rates are subject to change. Early application is encouraged due to the high demand for University housing. Assignments are made in accordance with the established priority system which is determined by the date of the $100 application fee/ deposit ($25 nonrefundable application fee and $75 deposit).

Single Student Housing

The University maintains furnished and unfurnished apartments, efficiencies, and sleeping rooms for single students. Leaseholders must be senior, graduate level, or 26 years of age or older. Rent, which in most cases includes all utilities except electricity and telephone, ranged from $226 to $425 for the 1996-97 academic year.

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 $226 to $540 for the 1996-97 academic year. In most cases, the rent includes heat, water, garbage, and basic cable TV. All family housing apartments are unfurnished. The largest family which can be accommodated in a three bedroom apartment is seven people.

Princeton Mobile Home Park

The University maintains a modern facility for privately owned mobile homes on the north side of the campus. Princeton Mobile Home Park is reserved for either families or students who are classified by the UND Registrar’s Office as senior, graduate level, or 26 years of age or older. The monthly lot rental for the 1996-97 academic year was $135. The leaseholder/application must own the mobile home to be eligible for assignment.

OFF CAMPUS HOUSING

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

FRATERNITY AND SORORITY MEMBERSHIP

Fourteen national social fraternities and seven national social sororities maintain houses adjacent to the campus in which residence and 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, ND 58202-8136 (777-3667)
Division of Student Affairs Services

Under the direction of the Vice President for Student Affairs, a number of services, programs, and activities are available to assist students. Students needing assistance or information should contact the appropriate office as described below, or may contact the office of the Vice President for Student Affairs, 307 Twamley Hall, phone 777-2724.

The basic mission of the Division of Student Affairs is to provide resources and services to students to help them meet their immediate needs and to assist them in developing those skills which will enable them to be successful on campus and to be able to enter and be successful in society when they leave campus.

CAREER SERVICES CENTER
280, McCannel Hall
Phone 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 group assistance in job search techniques, resume/letter writing, and interviewing skills. Career Services encompasses the function of placement in conjunction with Job Service North Dakota. A division of Career Services, Cooperative Education 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, holds three annual Career Fairs, provides job referral information to employment openings listed with Job Service, and distributes a weekly vacancy list that advertises job openings. Our resource library houses labor market information, audiovisual materials, company literature, computerized job information systems, and direct on-line access to the Internet.

Career Services provides a resume service and credential file for a nominal fee. Students in all disciplines are encouraged to establish a credential file which includes a data form, transcript(s), and reference statements. The credential file is used for on-campus interviewing and mailed to employers upon student or employer request. Included in the fee is the weekly job vacancy bulletin.

Assistance is available for undergraduate and graduate students of any discipline. Orientation sessions for registering with Career Services are offered daily.

COUNSELING CENTER
McCannel Hall
Phone 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 McCannel Hall any-time 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.

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 Service. The administration of the College Level Examination Program (CLEP) and numerous graduate or professional school entrance examinations (GRE, GMAT, MCAT, etc.) is done by the Testing Service. 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.

University Learning Center. This component of the Counseling Center provides academic skills assistance for students in order to help them achieve an increased measure of academic success.

Professional staff are available to work with students on an individual basis to assess and identify student learning strengths and needs. The center also provides course specific tutoring, credit courses, and workshops in skill development areas. In addition, the center employs peer tutors in all subject areas.

All Center services, including tutoring, are available free of charge to students.

The University Learning Center is located in 201A Memorial Union. The Center is open Monday through Friday between 8:00 a.m. and 4:30 p.m. Call (701) 777-4406 for more information.

Career Counseling Services. Career Counseling Services offers assistance to help UND students make informed and satisfying decisions about career and educational goals. This service offers guidance through four areas: Career Walk-In Center, Individual Career Counseling, Career Presentations, and a Career Decision-Making Course.

Substance Abuse Prevention Program. Educational programming, individual and group counseling, referral to community treatment agencies, and informational workshops are offered through this Center program. In addition, a resource library for use by students, faculty, and staff is located in the Counseling Center.

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
(See Student Affairs Office, page 13.)

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

Disability Support Services (DSS) provides a variety of academic support services both directly and in collaboration with other University departments. These services provide equal access to academic programs to eligible students with disabilities. The support services used by an individual student vary depending on the specific disability. The list of services available through DSS include, but are not limited to: readers, taped textbooks, notetakers, adapted testing, tutors, adapted equipment and computer technology, classroom accommodations, academic advising, disability management/vocational counseling, referral, and arrangement of interpreter services.

It is the student’s responsibility to request disability related services by contacting DSS. Students will be asked to provide current documentation (no older than three years) from an appropriate professional (such as a physician, audiologist, rehabilitation counselor, psychologist, or learning disabilities specialist) that states the disability, functional limitations, and recommendations for academic accommodations and support services. It is strongly recommended that students contact DSS as soon as the decision to enroll is made in order to determine eligibility and to ensure that services will be arranged upon arrival on campus.
INTERNATIONAL CENTRE
2908 University Avenue
Phone (701) 777-3273
FAX (701) 777-4773

The UND International Centre features a pluralistic home and global learning environment for all, and provides opportunities for study, selecting books from the resource library, listening to a variety of international music, using a computer and laser printer, watching television, playing table tennis and chess, and meeting with people from 55 countries.

Weekly programs include:
• Educational forums, focusing on a variety of cultural perspectives and the world reality.
• Cultural events, including international food, music, artifacts, literature, attire, videos, history, language, slides and experiences.
• Celebrations of international holidays, birthdays, graduation, special events, and the annual Feast of Nations.
• Insight Sessions, focusing on understanding of oneself, all humankind, and the earth environment.
• English proficiency enhancement.
• Lecture series, providing interactive forums for UND classes studying various aspects of world cultures.
• World Coffee Cup, featuring international coffee and tea daily.

The UND International Centre Director advises students in academics, housing, banking, purchasing, financial aid, health insurance, library resources, acculturation, and personal issues.

The UND International Centre is open daily from 8 a.m. to 11 p.m., including weekends and holidays. Coffee and tea are always available. The Centre is a pluralistic place; all are welcome.

INTERNATIONAL PROGRAMS OFFICE
International Centre
2908 University Avenue
Phone 777-3301

The UND Office of International Programs supports and develops academic programs on campus to help prepare students to deal effectively with the growing interdependence of the world. Its goal is to promote and enhance the understanding of different countries and cultures.

To achieve these goals, the Office provides these services:
• Coordinating the International Student Exchange Program (ISEP), through which UND students may study at one of more than 100 schools throughout the world;
• Coordinating the UND-Norway exchange program;
• Providing information on Fulbright grants and other international faculty exchanges and development programs;
• Coordinating with the International Centre staff in promoting cultural programs and the International Student Organization’s activities;
• Selling International Student Identification and Hosteling International cards;
• Advising International Studies majors and minors.

The office is composed of a director of International Academic Affairs, the Coordinator of the International Centre, and an administrative secretary.

MEmorial Union
Phone 777-3926

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 Student LIFE Center, Craft Center, and Sign and Design Studio. Food service options include:

Burger King, the Deli, Espresso Cart, Centennial Dining Room, the Terrace Dining Center, and Campus Catering. Space in the Union for meetings or displays may be reserved by calling Central Scheduling at 777-3928 or by stopping in on first 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 (777-4321). The Lifetime Sports Center, located on the ground floor, offers billiards, bowling, electronic darts, 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 Organization Center, and Greek Life departments. Also located in the Union are Student Government, University Learning Center, the Computer Learning Labs, the Union Station parking services office, and Campus Barbers.

MULTICULTURAL STUDENT SERVICES
2800 University Avenue
Phone 777-4259

The Multicultural Student Services Office is located in the Era Bell Thompson Center on campus. MSS provides support services (academic, financial aid, personal, and social) to enhance African American, Asian American, and Hispanic American student success. An additional goal of this office is to familiarize the non-minority community with the targeted cultures.

NATIVE AMERICAN PROGRAMS
317 Cambridge Street
Phone 777-4291

Native American Programs assists the University of North Dakota in developing the talents of the largest ethnic minority in the state, the Native American. The office assists all aspects of the University to maintain a climate that is responsive to the needs of the Native American; serves as a general institutional contact for Native American students; and provides academic, financial aid and personal advisement. Native American Programs offers American Indian students financial support to participate in the tutorial program administered by the University Learning Center. Native American Programs is responsible for administering the Native American Center, coordinating faculty exchanges and development programs; coordinating recruitment, establishing communication channels, assisting with institutional planning, advising faculty and staff as to the needs of American Indian students, and serving as an advocate for the Indian student. The program also acts as a liaison with the reservation communities to bring the University and the students’ home communities closer together.

STUDENT AFFAIRS OFFICE
McCannel Hall
Phone 777-2664

The Student Affairs Office mission is to 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. This mission includes providing 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 scope of the Student Affairs Office’s responsibilities includes the following:
• Student assistance, advisement, and referral to include academic, personal, and developmental services.
• Student advocacy.
• Campus policy assessment and development.
• Consulting with faculty, staff, and students about academic and behavioral issues.
• Conflict resolution.
• Crisis management and Crisis Team coordination.
• Student judicial matters including coordination of campus hearing officers and procedures.
• Special circumstance withdrawals from the University.
• Absence notification.
• Program development and research.
• Serving as liaison between UND and greater community.

In addition, the following offices provide various services and initiatives to the University, the surrounding community, the state and region: Era Bell Thompson Cultural Center and TRIO Programs (Student Support Services, Talent Search, Upward Bound, Educational Opportunity Center, and McNair Postbaccalaureate Achievement Program). Additional details on these areas may be found in the section in this Division of Student Services area in this catalog.

STUDENT FINANCIAL AID OFFICE
216 Twamley Hall
Phone 777-3121

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 on page 8 of this catalog.

STUDENT HEALTH SERVICE
McCannel Hall
Phone 777-3963

The Student Health Service is a full-service medical clinic that provides medical evaluations, treatment, laboratory, x-ray and pharmacy services, and health education programs. It is an appointment clinic designed to treat all enrolled students. Spouses of enrolled students may use the Health Service for a minimal per-semester fee. Faculty and staff may be treated under job-related emergency conditions. Medical service, including that for children, is available at the UND Family Practice Center, telephone 780-6800. Appointments for DUI evaluations, alcohol assessments, and other related issues can be scheduled with our Licensed Addiction Counselor. Brochures are provided on various health topics.

After-hours medical coverage is available 24 hours per day. To reach a doctor, call 777-3963.

Students are not charged for office calls. The cost is covered by the per-semester health fee. There is no limit to the number of visits per semester. There is a charge for medications, laboratory and x-ray services, and for special examinations, usually at a rate that is less than in the community. All charges are billed through the University Business Office and are charged to the student, regardless of third party coverage.

The Student Health Service is located in McCannel Hall. Regular school year hours are 8 a.m. to 4:30 p.m. by appointment, Monday through Friday.

OFFICE OF SUBSTANCE ABUSE PREVENTION
Counseling Center
McCannel Hall
Phone 777-2127

The Office of Substance Abuse Prevention provides information and assistance to students who have questions or concerns related to alcohol or drug use, co-dependent behavior, adult children of alcoholics experiences, or other addictive tendencies. This program is actively involved in organizing, planning, and presenting workshops and activities designed to help individuals make positive and responsible decisions about addictive and high risk behaviors. The Alcohol and Drug Abuse Prevention Team (ADAPT) offers a variety of wellness workshops, facilitated by Peer Assistants, which increase awareness of chemical use and abuse issues. The Office of Substance Abuse Prevention is located in the Counseling Center in McCannel Hall.

TRIO PROGRAMS
(Student Support Services/Upward Bound/Educational Talent Search/Educational Opportunity Center/Ronald E. McNair Program)
Bek Hall
Phone 777-3426, 3427, 3816, 3809, 4931

The UND components of TRIO programs are funded by the United States Department of Education.

Student Support Services. 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.

Upward Bound. The Upward Bound program provides assistance to low-income and first generation (neither parent has earned a bachelor’s degree) high school youth at selected target schools in North Dakota, in obtaining the academic skills and motivation necessary to attend a post-secondary institution. The services are provided throughout the academic year and during a six-week residential program held on the University of North Dakota Campus. For further information, call 777-3427.

Educational Talent Search. The Educational Talent Search program assists in enabling youth who have academic potential, but may lack adequate information or school preparation to enter, continue, or resume programs of secondary and post-secondary education. Services include academic advisement, financial aid information and workshops, tutoring and student skills, career counseling and interpretation of interest tests.

Educational Opportunity Center. The Center assists participants who have academic potential, but may lack adequate information or school preparation to enter, continue, or resume programs of secondary and/or post-secondary education. Services include but are not limited to: Career Exploration, Admissions, Financial Aid, GED, Workshops, and assisting individuals when transferring from a two-year to a four-year institution.

Ronald E. McNair Program. 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 departments. 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 doctorate level.
problems. Those individuals who believe that they have been victims of discrimination should consult with the Affirmative Action Officer concerning discrimination policies. The Affirmative Action Office is responsible for oversight of the University’s grievance procedures covering discrimination.

The Office of Admissions and Records creates and maintains the academic record of each student enrolling for courses through UND’s instructional delivery systems. The Director serves as University Registrar and Secretary to the University Senate. The Office is responsible for monitoring all academic policies and procedures relative to admission, curriculum, registration, and grade processing. The Admissions area reviews and processes all applications for undergraduate admission and readmission, evaluates transcripts, and maintains transfer articulation agreements.

**UNIVERSITY LEARNING CENTER**

Memorial Union, 201A
Phone 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 skills assistance is available in the following areas: (1) Individual assistance, (2) Tutoring, (3) Credit courses, (4) Workshops in skill development areas. The services provided by the University Learning Center are free of charge to students.

The University Learning Center accepts applications for peer tutors in all subject areas throughout the year.

The University Learning Center provides consultation for students, staff, and faculty.

**VETERAN SERVICES**

McCannel Hall
Phone 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 777-4300

The purpose of the Women’s Center is to provide support, advocacy, and education for the UND campus and the community. The center offers a warm, friendly, growth-oriented environment where both men and women can explore their roles in society. Current issues may be discussed, and new skills developed. Ongoing programs include a Wednesday noon Feast & Focus series and a Thursday noon “For Women Only” series where people gather to discuss a variety of topics and issues important to their lives and experiences. Other offerings include discussion groups, reading groups, and programming related to Women’s History. A lending library and study area are located on the second floor and are available to all. The Women’s Center is open Monday through Friday, 9:00 a.m. to 4:30 p.m.

**Other University Services**

**ACADEMIC MEDIA CENTER**

(See Center for Instructional and Learning Technologies, page 17)

**ADMISSIONS AND RECORDS**

Twanley Hall
Phone 777-2711

The Office of Admissions and Records creates and maintains the academic record of each student enrolling for courses through UND’s instructional delivery systems. The Director serves as University Registrar and Secretary to the University Senate. The Office is responsible for monitoring all academic policies and procedures relative to admission, curriculum, registration, and grade processing. The Admissions area reviews and processes all applications for undergraduate admission and readmission, evaluates transcripts, and maintains transfer articulation agreements.

**AFFIRMATIVE ACTION-EQUAL OPPORTUNITY COMPLIANCE**

Twanley Hall
Phone 777-4171

The Affirmative Action Office is responsible for oversight of the University’s equal opportunity and affirmative action program; Rehabilitation Act of 1973, Sections 503 and 504; Titles VI and VII of the Civil Rights Act of 1964; Age Discrimination in Employment Act; Title IX of the Education Amendments of 1972; and the Americans with Disabilities Act as well as responsible for compliance with Federal and State laws and regulations involving civil rights, equal employment and equal educational opportunity. Under equal employment and equal education opportunity, the University declares that it will not discriminate on the basis of race, color, religion, sexual orientation, national origin, sex, or age and otherwise encourages the inclusion of members of minority groups (African-American, Hispanic, Asian, Native American), women, disabled persons, and Vietnam 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. Complaints related to the Family Educational Rights and Privacy Act may be addressed to the Affirmative Action Office.

Students are encouraged to use the resources in the Affirmative Action Office regarding minority, women, and disability issues and to consult with the Affirmative Action Officer concerning discrimination problems. Those individuals who believe that they have been victims of unlawful discrimination are encouraged to contact the Affirmative Action Officer for UND’s grievance procedures covering discrimination.

**ALUMNI ASSOCIATION AND FOUNDATION**

J. Lloyd Stone Alumni Center
Phone 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 Foundation and the UND 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.

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 80,000 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. Currently the Foundation is in the midst of the “21st Century Campaign,” a five-year
effort launched in July 1995 with the goal of raising $50 million in new gifts, pledges and commitments to be reached by December 31, 2000. The Foundation manages assets in excess of $67 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. UND alumni and friends have also made contributions for research and lectureships and have given financial support to many activities on the UND campus, including music and athletics. The Alumni Association and Foundation administer more than 1,500 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.

**CAMPUSWIDE INFORMATION SYSTEM**

*(See UNDInfo, page 18.)*

**CHESTER FRITZ AUDITORIUM**

Phone 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, the literature of theatre, and the portrayal of past societies as a basis for comprehension of today’s world; and (3) As a public facility to be used by both University and non-university programming groups.

**UNIVERSITY CHILDREN’S CENTER**

525 Stanford Rd.

Phone 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 three, four, and five years old. Children who attend Kindergarten 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. Daily attendance is limited to a full-time equivalency of 64 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 accredited by the National Academy of Early Childhood Programs and licensed by the North Dakota Department of Social Services.

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

**COMPUTER CENTER**

**Upson Hall**

Phone 777-3171

The University’s computing resources include an IBM 9672-R31 with 256 megabytes of memory, a Unisys 2200-521 system running the “ODIN” library system, a RS/6000 530/H, and an IBM RS/6000 J30. Through state of the art fiber optic technology, the Computer Center in Upson Hall is also linked to the State Higher Education Computer Network mainframes and minis, the Internet, through which individuals can communicate via electronic mail, access databases and other information throughout the world, and use NSF super-computers. On campus networking links the Computer Center facilities with microcomputers and terminals across the campus to provide individuals access to these services. Numerous LANS provide resource and file sharing and microcomputer based electronic mail within departments and across campus. The Computer Center emphasizes convenience and ease of use for students and faculty.

Students have access via microcomputers to the UNIX systems in several classroom buildings, residence halls, the Chester Fritz Library, Memorial Union and a 24-hour facility in the Computer Center. They have access to several minicomputers and microcomputer clusters around the campus which offer a variety of hardware and software. A computer learning lab in the Memorial Union contains microcomputers which provide instructional facilities for students and faculty.

The User Services Department within the Computer Center provides program consulting, instructional workshops and documents, LAN support, microcomputer discount purchase program consulting and assistance to all elements of the academic and administrative community including instruction, research and administrative service.

The Computer Center Help Desk, telephone 777-2222, provides a single contact point for help with a computing problem or question. The Help Desk is answered 24 hours a day, seven days a week.

The Computer Center “System Status” number, 777-3300, provides up to date status of mainframe applications.

**ENROLLMENT SERVICES**

312 Twamley Hall

Phone 777-4463

777-4467 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 offices provides tours of campus as well as sends general information and applications for the University. Additional information about visiting campus may be found on page 3.

**GENERAL COUNSEL**

Room 104, O’Kelly Hall

Phone 777-6345

The General Counsel is the chief legal adviser to the President, officers, faculty, and staff of the University, and is responsible for handling all institutional legal matters affecting the University. The General Counsel is responsible for approving all requests for the use of off-campus legal counsel and the supervision thereof. Requests for legal services should be routed through the appropriate vice-president. Services are not available to students.

**OFFICE OF INSTITUTIONAL ANALYSIS**

Twamley Hall

Phone 777-4358

The Office of Institutional Analysis is responsible for UND’s institutional research, which involves the gathering, synthesizing, analyzing and reporting of data to support University decision-making. It con-
ducts or supervises research projects of a highly complex or comprehensive nature, including both on-going and special projects; provides leadership in all aspects of institutional research and campus-wide data management; serves as a clearing house for the internal and external reporting of data; compiles a University fact book; is administratively responsible for university-wide assessment activities; and responds to requests for counsel or assistance from other offices. OIA reports to the Vice President for Academic Affairs, with a direct access relationship to the President.

OFFICE OF INSTRUCTIONAL DEVELOPMENT
Twamley Hall
Phone 777-3325
The Office of Instructional Development (OID) exists to assist the UND faculty with the improvement of instruction and their continuing professional development as teachers. The Office, along with the Faculty Instructional Development Committee, provides funding opportunities for faculty and academic staff members to support workshops and seminars, the development of instructional materials, course and curriculum improvements, and other projects. The Office staff consults with and assists faculty members, academic departments, and deans.

CENTER FOR INSTRUCTIONAL AND LEARNING TECHNOLOGIES
Sayre Hall
Phone 777-2129
The Center for Instructional and Learning Technologies provides a resource for faculty interested in the advancement of learning and teaching through the appropriate integration of technology. The center is committed to meet the challenges facing higher education in the 21st century which acknowledge the importance and value of technology, but which also recognizes that our approach should be driven by our educational purposes and values, not just by technology.

- Service Apple and IBM certified warranty and post-warranty repair services for approved units.
- Facilitate the introduction and demonstration of the general campus classrooms with an integrated instructional delivery system.
- Ensure that appropriate and desired instructional delivery equipment is easily accessible to faculty and departments, through classroom installations and a system of equipment pools including on-site technical support and coordination with Physical Plant for repair.
- Develop professional quality instructional and research presentation materials through the graphic design and photographic services area.
- Act as a resource for faculty interested in improving teaching and learning through the application of technology.
- Manage a facility designed for faculty interested in exploring new technologies and ideas, as well as a place to develop instructional applications through scheduled workshops and consultations.
- Promote effective and selective educational uses of information technology and information resources.
- Provide video recording services for classroom instruction in addition to duplication of audio and video tapes.
- Consult on-site with faculty to assess/troubleshoot computer equipment and software.

UND OFFICE OF INTERNATIONAL PROGRAMS
International Centre
2908 University Avenue
Phone 777-3301
The UND Office of International Programs supports and develops academic programs on campus to help prepare students to deal effectively with the growing interdependence of the world. Its goal is to promote and enhance the understanding of different countries and cultures.

To achieve these goals, the Office provides these services: (1) Coordinates the International Student Exchange Program, (ISEP), through which UND students may study at one of more than 100 schools throughout the world; (2) Coordinates the UND-Norway exchange program; (3) Provides information on other study and work abroad opportunities; (4) Provides information on Fulbright grants and other international faculty exchanges and development programs; (5) Coordinate with the International Centre staff in promoting cultural and the International Student Organizations activities; (6) Sells International Student Identification and Hosteling International cards; (7) Advises International Studies majors and minors.

The Office is composed of a director of International Academic Affairs, the Coordinator of the International Centre, and an administrative secretary.

LABORATORY EDUCATION FOR NORTH DAKOTA (LEND)
Medical Science Building
Phone 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 1,000 participants at 40 plus sites throughout North Dakota. The program is an important link for lifelong continuing education opportunities for residents of North Dakota.

LEGAL COUNSEL
(See General Counsel, page 16.)

LIBRARIES

Library facilities on the UND campus are collectively known as the University Libraries. The Library system consists of the Chester Fritz Library and three branches, as well as two autonomous libraries affiliated with the professional schools of law and medicine, the Thormodsgard Law Library and the Harley E. French Library of the Health Sciences. The holdings of the University Libraries number more than 3 million items and 1,104,000 volumes. Subscriptions are maintained for approximately 8,410 periodicals.

As the oldest and largest library in the University of North Dakota Library System, and the largest library in the state, the Chester Fritz Library is highly regarded by scholars in the region. Although some of its resources have restricted access, most are available to everyone. Built in 1961, enlarged and renovated in 1982, the Chester Fritz Library is designed to be a convenient point of entry into the complex University library system for UND’s 12,000 students and faculty. The Chester Fritz Library participates in various public document depository programs such as those of the Educational Resources Information Center (ERIC), U.S. Superintendent of Documents, and the U.S. Patents and Trademarks Office. In addition, the Library’s Elwyn B. Robinson Department of Special Collections acquires materials which primarily focus on the Great Plains, North Dakota, and the University.

To access library holdings, ODIN, an online catalog of North Dakota library materials, is used. ODIN allows access to library collections throughout North Dakota, the region, and the nation. ODIN, is accessible via terminals throughout the Library system and from home or office computers. Information about journal articles may be found on the electronic indices loaded on ODIN, and on the growing number of computer data bases, as well as in traditional print formats to which campus libraries subscribe.

Reference librarians in the Chester Fritz Library can help library users design research strategies, solve bibliographic problems, and find information through a variety of traditional and electronic sources.
Some of the other services the library offers include: individualized guidance to students engaged in extensive research projects, faculty-initiated beginning and advance subject instructional sessions, a one credit class in library oriented research, and Interlibrary Loan services.

The University Libraries are participants in a statewide library automation system that provides access to library collections throughout North Dakota, the Region, and the nation.

**PERSONNEL SERVICES OFFICE**
Twamley Hall
Phone 777-4361

The Office of Personnel Services is maintained for the purpose of assisting the various departments on campus in fulfilling their staff employee needs, as well as assisting persons who are interested in working at the University of North Dakota. The University offers a wide variety of positions to qualified persons without discrimination because of race, color, religion, sex, political affiliation, age, disability, sexual orientation, marital status, or national origin. These positions include clerical and professional work, laboratory and hospital services, engineering and mechanical work, food services and custodial, skilled and unskilled labor and many others.

Additional information on employment at the University may be obtained from the Office of Personnel Services, Box 8010, Grand Forks, ND 58202 or E-mail to personnel_services@mail.und.nodak.edu. The Office of Student Financial Aid (see page 19) should be contacted by students seeking part-time employment.

**OFFICE OF RESEARCH AND PROGRAM DEVELOPMENT**
Twamley Hall
Phone 777-4278

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

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 the Budget and Grants Administration (BGA). The Director of ORPD is responsible for providing requested certifications and to assure compliance with policies and regulations required by the Federal government and other funding agencies. These regulations include human subjects, animal care and use, copyrights, intellectual property policies, use of radioactive materials, recombinant DNA research, and a drug-free workplace. The negotiation of contracts, grants, subcontracts, and subgrants is a joint process involving BGA, ORPD, and the Principal Investigator.

ORPD also provides administrative support to the Faculty Research Committee and to committees required by Federal regulations, particularly the Institutional Review Board, which approves research projects involving human subjects, and the Institutional Biosafety Committee, which approves research projects involving DNA.

**SPEECH, LANGUAGE AND HEARING CLINIC**
Montgomery Hall
Phone 777-5232

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.

Basic clinical services are provided without charge to university students. In addition, 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 hearing aid evaluations. 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**
211 Twamley Hall
Phone 777-2117

The Office of Student Academic Services assists new students with their academic and personal transition to the University through programs for new freshmen and transfer students and by providing academic advisement for all students who have not declared a major.

Professional academic advisors assist students in exploring their educational and career goals as well as providing ongoing academic and personal support. The Office of Student Academic Services coordinates the initial registration for all new freshmen. More information may be found beginning on page 56.

Orientations and retention programs work to assist students with their transition to the University as well as to complete a successful and satisfying college experience. Students are introduced to university life through orientation activities held prior to the first day of class, a seminar course for first-year students, and events for special populations and families. Retention efforts include identifying barriers to student success and implementing appropriate interventions.

**TELEVISION PRODUCTION CENTER**
Rural Technology Center
Phone 777-4346
Fax 777-4342

The general mission of the Television Production Center is to provide television production services for university clients, program UND Cable Channel 3, and provide studio facilities for the broadcasting curriculum.

Television facilities include a complete production studio, a computerized post-production edit suite, and remote production equipment. Projects are produced by a full-time professional staff with assistance from part-time students. Clients are charged a fee for production services.

Students may gain practical experience by working as interns on Studio One, UND’s award winning television show featuring, news, weather, sports, interviews, and features of local, national, and international interest. Students operate studio equipment, write news stories, produce feature segments, design publicity materials, and forecast weather. Internships are nonpaid and are open to all UND students. For more information, contact the Television Production Center Internship Coordinator.

**UNDInfo**

UNDInfo is the University’s home page. It contains directories for faculty and students, statistics, news, events, calendars, departmental, sports, alumni and entertainment information, academic catalogs, library holdings, course schedules, handbooks, and much more. UNDInfo’s address is http://www.und.edu.
UND RADIO — KFJM-AM/FM, KFJY-FM
Old Science
Phone 777-2577

The University operates three public radio stations. First licensed in 1923 as a “land wireless” station, KFJM began primarily for the purpose of giving students the advantage of observation and practice in operating a radio transmitter. Since then, the purpose has broadened to serve the University and regional communities with high quality program services that provide informational and cultural opportunities not readily available elsewhere.

KFJM-AM 1370 covers a radius of about 65 miles in the daytime, and about 30 miles at night. The AM’s 24-hour program service is predominantly news, information, and jazz, with additional programming of big bands, comedy, and radio theater.

KFJM-FM 89.3 began broadcasting in 1976, covering a radius of about 30 miles. Through a series of low power repeaters, the signal is extended to Devils Lake, Thief River Falls, Lakota, and Cray. The FM’s 24-hour service is primarily classical music with several hours per day of news programming. Both stations are members of National Public Radio.

A new station, KFJY-FM 90.7, signed on in 1995. It reaches about 10 miles, and plays adult alternative and contemporary folk music, with jazz at night.

The radio activities are supervised by a professional staff. Participation is open to students and other members of the University community, and community volunteers.

OFFICE OF UNIVERSITY RELATIONS
Twamley Hall
Phone 777-2731

The Office of University Relations (OUR) is UND’s central communication and public relations department. Its goals are (a) to generate awareness, understanding and support among the University’s many constituencies, and (b) to assist in the acquisition of the human and fiscal resources necessary for UND to continue its development as a comprehensive university of regional and national rank. Reporting directly to the Office of the President, OUR also maintains liaison with other units performing advancement-related tasks, and serves as an institutional contact with such affiliated but legally independent organizations as the UND Alumni Association and Foundation. OUR also assists with management and supervision of UNDInfo, UND’s menu system on the Internet.

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 and action tools to reach the general public and special constituencies such as faculty, staff, students, alumni, the local community, educators, government officials, and business and foundation 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, videotapes and slide shows, 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.

UNIVERSITY WRITING PROGRAM
12A Merrifield Hall
Phone 777-3600

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, awards small grants to academic units working on curriculum development, and serves as a clearinghouse for information and materials on teaching with writing.

The University Writing Program Advisory Committee, made up of faculty representatives from each undergraduate college, also assists in the development and support of writing intensive courses designed to fulfill the general education Communication requirement.

Writing Center. The Writing Center (Merrifield 12) 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 topic selection, 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.
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(Also see the Index beginning on page 247 of this Catalog to find the location of more specific subject matter than is listed in this contents.)
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, visitsations at schools and college fairs, tours of the UND campus, and personal contacts by the telephone 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 701/777-4463. 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. A Regular Full-Time Student is one who has offered the entrance requirements and is duly enrolled as a candidate for a degree in at least twelve semester hours of credit during a fall or spring semester. 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.

A Regular Part-Time Student is one who has entirely satisfied the entrance requirements, is duly enrolled as a candidate for a degree, but is registered for fewer than twelve semester hours of credit during a fall or spring semester. (Students enrolled in Cooperative Education 337, see p. 31.) There is no specific minimum number of credits in which a student of this classification must be enrolled.

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 graduated from high school prior to 1993 and are deferring Regular Admission 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 standardized college entrance exams. The American College Test (ACT) is preferred, though the SAT is also 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 and are under the age of 23, 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 I 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 University Admissions Committee will consider exemptions to the policy because of special circumstances.

The Admissions 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, or a low high school grade point average.

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, NDSU-Bottineau, UND-Lake Region and UND-Williston. 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 and is at least 19 years of age may be admitted to the University by completing the test of General Educational Development (GED) with a minimum score of 40 or above on each exam and an overall average of 50 on the entire test.

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. The International Student Office provides assistance and counseling to students from countries other than the United States. International students should write to the International Student Adviser as well as to the Office of Admissions.

Canadian students are required to have completed Grade XII and to meet high school core curriculum admission requirements. They must also complete the ACT (preferred) or SAT and request that the official results be sent to UND to be eligible to enter the University as freshmen.
Students who are currently attending high school may be allowed to enroll in University courses as special students with permission of the Associate Director of Admissions and Records and the student’s high school principal and 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.

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 Scholastic Aptitude Test (SAT) may request official test scores be mailed to the Office of Admissions from SAT in Princeton, NJ, in lieu of the ACT. 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.

Measles/Rubella Immunization. All students attending North Dakota colleges and universities must prove immunization against measles and rubella.

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 selected disciplines. See page 31.

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, 204, 206, 211) 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. Ask your advisor, or contact the mathematics department, concerning time and place of this test.

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. Three different placement exams are used. Which exam will be taken is based upon ACT Math scores. Placement test results will determine beginning placement in Intermediate Algebra (Math 102), College Algebra (Math 103), Finite Math (Math 104), Trigonometry (Math 105), Survey of Calculus (Math 204), Discrete Mathematics (Math 208), Calculus I (Math 211) or Math for Elementary School Teachers (Math 277). *Math 102 credit will 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. Additional information regarding CLEP is found on page 31.

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, they 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 beginning on page 35).

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.

2. All applicants are required to complete and return the application for admission to the Office of Admissions with the $25.00 non-refundable application fee. In addition, beginning freshmen must request the principal of their high schools to send a transcript of their records directly to the Office of Admissions.

3. The freshman applicant is required to take the ACT (preferred) 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 November 15 prior to the opening of the spring semester and April 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 Associate Director of Admissions and Records.

3. Students may make application for admission for either fall or spring semester or the summer session.

Admission of Transfer Students

Transfer students from other colleges and universities who have earned fewer than 60 semester hours of credit that is 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 toward a degree program at UND.

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 Center for Aerospace Sciences, the College of Education and Human Development, the College of Fine Arts and Communication, the School
of Engineering and Mines, the College of Nursing, and the School of Medicine and Health Sciences (Physical Therapy, Athletic Training, Cytotechnology, Clinical Laboratory Science, Occupational Therapy). For information on admission requirements and grade point average requirements of UND’s colleges and schools, see the listings beginning on page 35. 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 Admissions 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 Students applying for transfer admission from United States colleges must, in addition to the application for admission, complete a foreign student adviser reference form and a certification of finances form. The TOEFL (Test of English as a Foreign Language), with a score of 525 for undergraduate students, is required for all students whose native language is not English.

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. Violation of this regulation will be regarded as a serious offense and may result in the student’s dismissal from the University.

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.

Measles/Rubella Immunization. All students attending North Dakota colleges and universities must prove immunization against measles and rubella. Students will be allowed one semester to provide this information to the Student Health Service or they will not be allowed further registration.

Transfer Credit. In general, students may transfer credit to the University for any courses successfully completed at regionally accredited colleges and universities, providing (a) the courses were in disciplines offered at or cognate to those offered at the University; and (b) the courses do or would receive credit if offered at the University.

Students pursuing degrees in vocational education (Business Education or Industrial Technology), or in such programs as Aviation Maintenance Management; Dietetics; or Clinical Laboratory Science who have completed approved vocational programs of at least nine months duration may be allowed transfer credit, on a block basis, in the major area. The amount of credit will be determined by the department chair in the respective major. The credit granted will be applied only toward degrees in the specified majors.

Transfer students from two-year colleges (junior or community colleges) are required to complete a minimum of sixty 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.

2. Students must complete the application and return it to the Office of Admissions together with a $25.00 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 to transfer 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 Associate Director of Admissions and Records and the Dean of the student’s college.

Readmission of Former Undergraduate Students

Former undergraduate students of the University of North Dakota who wish to return must submit a Request for Readmission form to the Admissions Office. Those who have enrolled in other institutions must submit official transcripts for evaluation before they will be considered for readmission. (Returning graduate students should refer to the Graduate Bulletin.)

The completed Request for Readmission form should be returned to the Office of Admissions at least one month before the beginning of the semester in which the student expects to return to the University.

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.
Undergraduate Academic Information

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 beginning on page 27 describing the University’s general graduation requirements. Since institutional policies may change between catalog publication dates, students are encouraged to consult with their academic advisor 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.

University, college and departmental requirements. Undergraduate students must meet three sets of requirements to be graduated from the University of North Dakota: (1) University graduation requirements, which are summarized on pages 27-31; (2) requirements of the UND college or school granting the student’s degree, which are summarized on pages 35-55; and (3) the requirements of the student’s major department or program area, which are summarized on pages 58-155.

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 student. 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. Listings of undergraduate majors and minors are included on page 240. Curricula for specific majors will be found in the Courses of Instruction section of this catalog, beginning on page 58.

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 (pages 27-31, immediately following this section), students are urged to read this statement of philosophy prepared by UND’s General Education Requirements Committee. One aspect of the University-wide graduation 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.

Introduction

The University of North Dakota provides students opportunities to enrich their lives through a large number of major and minor fields of study designed both for general education and for academic specialization. This dual objective — non-specialized and specialized education — ideally is reciprocal and inclusive. Each kind of education is expected to inform and enrich the other and to contribute to those special qualities and abilities we have come to expect of university graduates.

While the directions and purposes of specialized programs usually are clear, the directions and purposes of general education have often been left undefined. For this reason, the General Education Requirements Committee has defined a number of broad and specific goals to serve as guideposts for faculty proposing and teaching courses designed to fulfill general education requirements and also to enhance students’ understanding of the purposes of a university education.

These broad goals are rooted in a belief that a general education program should help students develop (1) the ability to make informed choices, (2) the ability to communicate effectively, (3) intellectual curiosity and creativity, (4) a continuing commitment to learning, (5) a capacity and interest in serving others, (6) a sense of responsibility both to specific communities and to a culturally pluralistic world, and (7) greater personal satisfaction through access to the larger social, political, economic, scientific, and aesthetic culture.

The specific goals have been organized into two sets. The first set is not tied directly to any particular discipline and gives attention to integration around such abilities as critical thinking, effective communication, creative thinking, recognizing relationships and understanding value formation. The second set is more closely tied to the areas of study included in the general education program: the social and behavioral sciences; mathematics; science and technology; and humanities and the fine arts.

1. Cross-Disciplinary Abilities

A. Critical Thinking

Critical thinking can provide students confidence and assurance to make informed decisions. The processes of dissecting and reassembling ideas can be personally liberating and serve as a powerful means for developing one or more of the following abilities:

1. defining a problem and selecting pertinent information for its solution;
2. recognizing stated and unstated assumptions in order to formulate useful hypotheses;
3. understanding methods of inquiry as they are used in specific disciplines;
4. using imagination and insight to expand an exploratory process;
5. questioning what one has been told; and
6. relating skills to thought and action.
B. Communication
The ability to communicate is the ability to present information, ideas, feelings, and values, in such a way that people may be able to understand one another. Students should learn how to communicate effectively in as many ways as possible.

In order to communicate one must know languages. Each culture and each discipline develops its own language, with unique symbols, terminology, and rules for using its symbols. Students must advance their skills in the use of English, develop abilities to use other languages, and become acquainted with the specialized languages which exist in many areas — mathematics, computer science, graphics, the fine and performing arts, and others.

Communication also depends on experience in expressing oneself through language and experience in interpreting and appreciating what other people are trying to say. General education at the University should provide students with numerous opportunities to express their thoughts, feelings and values through language of all kinds, and to learn how well others have been able to understand them. Communication skills may be taught both by courses specifically emphasizing written and oral expression and interpretation and by courses emphasizing other aspects of the arts, sciences, and humanities.

C. Creative Thinking
While it is unrealistic to expect every student to bring into being original work of extraordinary merit, every person ought to be given opportunities and incentives to think creatively and to attempt creative work. Creative thinking can be encouraged by promoting students’ ability and effort:
1. to imagine alternatives to accepted ways of solving problems or formulating questions;
2. to change categories and comprehend analogies;
3. to generate new ideas; and
4. to add details, transform, or extend ideas.

Characteristics of a teaching environment that fosters creativity include:
1. encouragement of risk taking;
2. use of a rich variety of stimuli;
3. support for curiosity, imagination and experimentation;
4. opportunities for self-expression; and
5. tolerance for ambiguity and complexity.

D. Recognizing Relationships
Focusing upon relationships among parts — emphasizes connectedness and interdependency.

Learning to see connections is vital to general education. This process emphasizes:
1. inter-relatedness; conceptualizing links between events, entities and ideas and the larger context in which they occur;
2. inter-dependency; conceptualizing mutual dependency or reciprocity of events, entities, or ideas — seeing that the impact on one part has ramifications for the other parts and for the whole;
3. holism: conceptualizing a totality rather than considering discrete or individual elements that only partially depict that totality; and
4. structure: conceptualizing the underlying and relatively stable relationships that exist among events, entities and ideas which unify any totality.

E. Recognizing and Evaluating Choices
Education concerning values is important in general education — not seeking one right way to behave, but recognizing that choices cannot be avoided. Students should be aware of how many choices they make, how these choices are based on values, and how to make informed choices.

General education courses should deal with at least some of the following issues:
1. how human choices influence the results and dominant values of all disciplines;
2. how these choices have been made in the past;
3. how some of these choices might otherwise have been made; and
4. how choices are made, evaluated, and used to explain phenomena.

F. World Cultures
The University of North Dakota has established a World Cultures course requirement to enable students to:
1. gain an awareness of cultures geographically or historically different from their own;
2. gain an awareness of a language other than their native language;
3. foster a spirit of international understanding;
4. understand cultural systems other than their own;
5. address multi-cultural issues, or
6. learn about race, gender, or ethnicity other than their own.

This requirement will be satisfied according to the following format:
1. World Cultures courses will be taken as part of the General Education Requirements.
2. Students will find the plus sign symbol (+) before each course that meets the World Culture designation.
3. A minimum of three (3) credits of the General Education Requirements must meet the World Cultures designation.

II. Disciplinary Abilities
A. The Behavioral and Social Sciences

General education should include courses that help students understand the complexities and uncertainties of their personal and social environment; its differing goals and expectations, agreements and conflicts, actions and transactions; and how students intentionally and unintentionally can change and control their personal and social environment and be changed and controlled by it.

Specifically, general education in the behavioral and social sciences should give students knowledge about themselves and their human environment at three levels: 1) how human beings behave individually; 2) how individuals are linked to the social environment around them; and 3) how the social environment is organized and influenced by institutions.

For knowledge of individual behavior, general education should help students attempt to understand how human behavior originates, how it is integrated into a continuing and whole personality, and how it can deviate from what is intended or desired. To increase this understanding, general education courses should help students learn about how individuals think, obtain and use information, solve problems, make decisions, are motivated to act, develop over a lifespan, and can demonstrate a broad range of behavior.

For knowledge of the social environment, general education should help students attempt to understand how they are affected by the world around them, how they affect that world, and how they may be able to make intended changes in it. Improved understanding can come from learning about the following issues:
1. how groups of people make decisions intended to direct their own behavior and other people’s, or to change the conditions in which they and others live;
2. how the behavior of individuals is socially organized into different patterns of coordinated activity that individuals are obligated to perform;
3. how the cumulative effects of individuals and their behavior have consequences for the environment that individuals have not intended or controlled; and
4. how people produce, expend and exchange social resources, those resources whose existence and usefulness depend on social interaction (such as money, authority, information, or loyalty).

General education should also help students understand how the structure, organization and resources in the social environment depend on social institutions such as family and household life, religion, education, business, politics and health. General education about social institutions should address the origins of institutional characteristics, variations and options, how the institutional characteristics have changed and developed, and what the immediate and long-term consequences of these characteristics may be.
B. Mathematics, Sciences and Technology

General education in mathematics, science, and technology should provide students with knowledge of how human beings try to understand and control the fundamental phenomena and processes of the universe, and do so by means of readily understandable, accurate descriptions and explanations.

Mathematics

General education in mathematics should help students to understand and use mathematics as:

1. an intellectual discipline concerned with such considerations as quantity and space and their relationships;
2. a method of analyzing problems with logic and precision;
3. a way to communicate and interpret information provided by others; and
4. a continually developing tool, useful for describing and explaining phenomena.

General education in mathematics is one way to improve a student’s ability to think in terms of precise and quantitative relationships. It should develop abilities to perceive how things are logically related. It should also enable students to consider systematically alternative approaches to solving problems, and enable them to appreciate the accomplishment and elegance of solutions to problems.

General education courses should help students learn how to use mathematics as a basic tool for working in many different disciplines and for integrating the findings of different disciplines. Because it is important for students to understand that the concepts and methods of mathematics are not fixed, but are continually being expanded, revised, and refined, students can benefit from learning the history of mathematics, and learn how mathematicians evaluate their achievements and decide on their goals.

The Natural and Physical Sciences

To make a significant contribution to general education, courses from the natural and physical sciences ought to attract those who find science fascinating, those who approach it apprehensively, and those whose outlook falls somewhere between. Given the wide range of attitudes toward science, science courses designated as part of a general education program must necessarily differ from each other structurally and pedagogically. All should share, however, certain common characteristics.

Science courses intended for general education should offer students opportunities to acquire an appreciation of science and its contributions to society. General education courses in science should present current information on certain aspects of the natural world, and should require students to follow the logical, and sometimes mathematical, reasoning relating one structure or process to another. What differentiates science from other disciplines is its methods and its choice of problems. Scientists continually build and revise theoretical models to organize and explain natural phenomena. The theories must be logically consistent and must stand the test of experiments. Thus, as part of their general education, students should learn that science does not consist of a set of immutable or unquestionable facts but is by nature a continuing process of hypothesis and revision.

Technology

Throughout history humans have sought to apply their scientific knowledge in ways that enhance material culture, enlarge their capacity to produce goods and services, and defend physically their territorial and ideological borders. This application of scientific knowledge is what is commonly referred to as technology. Technology is visible everywhere and has brought enormous material benefits as well as increasingly complex social and environmental problems. The need to understand the tensions and conflicts that arise over the uses and consequences of technology is as critical as the necessity of making human understandings work.

The pursuit of each of these ideals requires different, often specialized skills. The full realization of any one of these ideals may require a lifetime of experience to perfect, during which one progressively hones skills, encounters a range of practical experiences, and learns to deal with a level of complexity not previously recognized.

Each culture has an image of the person who has had the benefit of a general education. The goals set forth in the preceding sections mirror the idealized vision of our university and of our contemporary society. The following set of courses is intended to make the achievement of these goals more attainable. Faculty and students must create from their commitment to general education a sense of the unity of learning.

C. Humanities and Fine Arts

The humanities and fine arts are expected to give principal attention to the individual and collective search for meaning through order, values and aesthetics. By giving focus to “a search for meaning,” the general education program encourages courses and related experiences which challenge how individual students think about and relate to the culture in which they live, as well as introduce them to some of the literature, the ideas, the art forms, and the expressions of social order which are rooted deep in history.

The search for meaning which is embodied in the humanities and fine arts is an exploration of the many imaginative answers given to the questions about the place of human beings in the universe by richly diverse cultures. In this sense, the humanities and fine arts are attempts to understand human action and thought, to find languages which express ideas and beliefs, hopes and fears, certainties and uncertainties. They provide opportunities for students to see how their present lives connect with the larger life of our culture as it has developed over time. The humanistic tradition embodies the age-long attempt to know and express self through works of the imagination and intellect.

While courses in the humanities and fine arts may help students examine their own values and ways of viewing the world, they also provide opportunities for students to encounter the great humanistic works. By enriching their experience with the exploration or other ways of seeing, of recognizing meanings, and of dealing with the world, students should discover in the interplay the complexity of our world.

As much as possible, humanities and fine arts courses should assist students to appreciate the roles of historians, writers, painters, philosophe rs, sculptors and musicians in giving voice to human understanding and aspiration. These courses may also help students to comprehend the joys that come from personal expression. Thus it is appropriate to provide within related general education courses both opportunities to participate actively in the humanities and arts as creators — as writers, painters, musicians or actors — and as audience in art exhibitions, performances, lectures and discussions.

Conclusion

General education as it is presented in this statement has few unique qualities. Thinkers and writers in various ages and cultures have voiced ideals for individuals and societies that undergird the concepts of general education presented. The pursuit of each of these ideals requires different, often specialized skills. The full realization of any one of these ideals may require a lifetime of experience to perfect, during which one progressively hones skills, encounters a range of practical experiences, and learns to deal with a level of complexity not previously recognized.

Each culture has an image of the person who has had the benefit of a general education. The goals set forth in the preceding sections mirror the idealized vision of our university and of our contemporary society. The following set of courses is intended to make the achievement of these goals more attainable. Faculty and students must create from their commitment to general education a sense of the unity of learning.

THE NORTH DAKOTA UNIVERSITY SYSTEM TRANSFER AGREEMENT

The North Dakota University System (NDUS) Transfer Agreement was developed to assist students who transfer within the NDUS. If you have completed your general education coursework at a NDUS institution and transfer to another NDUS institution, normally your general education requirement will have been met. If you have not completed your generals before transferring, most courses will be acceptable as generals at another NDUS school; however, the courses may be redistributed in general areas.

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 Director of Admissions and Records 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. 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.

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 for engineering students — see page 48. 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:
(1) Engl 101 Composition I (ND:ENGL) ..... (3)
(2) Engl 102 Composition II (ND:ENGL) ..... (3)
Engl 259 Technical and Business Writing (ND:ENGL) ..... (3)
(3) Comm 161 Fundamentals of Public Speaking (ND:SPCH) ..... (3)
Engl 102 Composition II (ND:ENGL) ..... (3)
Engl 259 Technical and Business Writing (ND:ENGL) ..... (3)
Engl 209 Technical and Business Writing (ND:ENGL) ..... (3)
Engl 308 Composition IV ..... (3)
E.E. 482 Technical Presentation and Portfolio ..... (3)
Hist 240 The Historian’s Craft ..... (3)
Mus 227 Popular and Classical Music of the World ..... (3)
Mus 330 Music History Survey I ..... (3)
Mus 331 Music History Survey II ..... (3)
Mus 332 Music History Survey III ..... (3)
Lan 101 Beginning Language ..... (4)

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

Anthropology
+Anth 100 Introduction to Anthropology ..... (3)
+Anth 171 Introduction to Cultural Anthropology (ND:SS) ..... (3)
+Anth 172 Introduction to Archaeology and World History (ND:SS) ..... (3)

Archaeology
+Anth 200 Introduction to World History (ND:SS) ..... (3)

Historical Analysis
+Anth 371 Cultural Dynamics ..... (3)
+Anth 374 Old World Prehistory ..... (3)
+Anth 375 North American Indians (ND:SS) ..... (3)
+Anth 377 North American Archaeology ..... (3)
+Anth 379 Culture Area Studies (ND:SS) ..... (3)

History
+Hist 201 Fundamentals of Public Speaking (ND:SPCH) ..... (3)
+Hist 202 United States to 1877 (ND:Hist) ..... (3)
+Hist 204 United States since 1877 (ND:Hist) ..... (3)
+Hist 206 Middle Eastern Civilization from Islam to the present time (ND:Hist) ..... (3)
+Hist 208 CANADA TO 1867 (ND:Hist) ..... (3)
+Hist 210 The United States: Military History (ND:Hist) ..... (3)
+Hist 214 Latin America to 1825 (ND:Hist) ..... (3)
+Hist 215 Latin America: The National Experience since 1825 (ND:Hist) ..... (3)
+Hist 220 History of North Dakota (ND:Hist) ..... (3)

+Hist 221 The Scandinavian Countries since 1500 (ND:Hist) ..... (3)
+Hist 222 The United States: The Early Frontier (ND:Hist) ..... (3)
+Hist 224 The United States: Western Frontier (ND:Hist) ..... (3)
+Hist 233 The United States: Social and Cultural, 21st Century (ND:Hist) ..... (3)
+Hist 343 Ancient Greece ..... (3)
+Hist 347 Ancient Rome ..... (3)
+Hist 348 United States: Civil War and Reconstruction, 1850-1877 ..... (3)
+Hist 416 Russia to 1855 ..... (3)
+Hist 417 Russia since 1855 ..... (3)

All History courses approved as GERs may be applied to either the Arts and Humanities or the Social Science requirement. See approved History GERs under Arts and Humanities.

Honor
Hon 102 Inquiry in the Social Sciences ..... (3)
Hon 292 Colloquium in the Social Sciences ..... (2-4)
Hon 392 Advanced Colloquium in the Social Sciences ..... (2-4)

Indian Studies
+IS 330 Contemporary Plains Indian Culture (ND:SS) ..... (3)
IS 331 Traditional Plains Indian Culture (ND:SS) ..... (3)

Nursing
+Nurs 490 Transcultural Health Care Theories, Research and Practice ..... (3)

Nutrition and Dietetics
+N&D 335 World Food Patterns ..... (3)

Political Science
PSci 101 American Government I (ND:SS) ..... (3)
PSci 102 American Government II (ND:SS) ..... (3)
PSci 220 International Politics (ND:SS) ..... (3)
PSci 225 Comparative Politics (ND:SS) ..... (3)
PSci 231 Politics of Public Administration (ND:SS) ..... (3)
PSci 305 American Constitution-Governmental Powers ..... (3)
PSci 306 American Constitution-Civil Liberties ..... (3)
PSci 309 The Legislative and Executive Processes ..... (3)
PSci 318 American Political Thought ..... (3)
PSci 320 Foreign Policy ..... (3)
PSci 322 Issues in Comparative Politics ..... (3)
PSci 339 Survey of Public Administration ..... (3)
PSci 402 Problems in State and Local Government ..... (3)
PSci 404 Urban Politics and Administration ..... (3)
PSci 405 Political Behavior ..... (3)
PSci 432 Public Policy Making Process ..... (3)

Psychology
Pey 101 Introduction to Psychology (ND:SS) ..... (3)
Pey 251 Developmental Psychology (ND:SS) ..... (3)
Pey 360 Introduction to Personality (ND:SS) ..... (3)
Pey 361 Social Psychology (ND:SS) ..... (4)
Pey 370 Abnormal Psychology (ND:SS) ..... (3)

Social Work
SWk 256 Social Welfare ..... (2)
SWk 257 Human Behavior in the Social Environment ..... (4)
SWk 354 Orientation to Gerontology ..... (2)
SWk 358 Contemporary Issues in Rehabilitation ..... (2)

Sociology
Soc 101 Introduction to Sociology (ND:SS) ..... (3)
Soc 102 Social Problems (ND:SS) ..... (3)
Soc 250 Diversity in America (ND:SS) ..... (3)
Soc 253 Juvenile Delinquency (ND:SS) ..... (3)
Soc 301 Basic Sociological Theory (ND:SS) ..... (3)
Soc 331 Rural Sociology (ND:SS) ..... (3)
Soc 335 The Family (ND:SS) ..... (3)
Soc 340 Sociology of Gender and Sex Roles (ND:SS) ..... (3)
Soc 352 Aging (ND:SS) ..... (3)
Soc 353 Sociology of Death and Dying (ND:SS) ..... (3)
Soc 354 Medical Sociology (ND:SS) ..... (3)
Soc 355 Drugs and Society (ND:SS) ..... (3)
Soc 361 Social Psychology (ND:SS) ..... (4)

Teaching & Learning
T&L 252 Child Development ..... (3)

Course fulfills the world cultures general education requirement.

III. Arts and Humanities  9 sem. hours min.
(must be taken in a minimum of 2 departments)

Education and Human Development
EHD 200 Library Orientation ..... (1)

English
Engl 151 Masterpieces of European Literature (ND:Hum) ..... (3)
Engl 152 Masterpieces of European Literature (ND:Hum) ..... (3)
### Honors

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<td>IS 255</td>
<td>Survey of Native American Art (ND:Hum)</td>
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<td>IS 345</td>
<td>Contemporary American Indian Issues</td>
</tr>
<tr>
<td>IS 352</td>
<td>Native American Philosophical Thought</td>
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</tbody>
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### Industrial Technology

**IT 322** Fundamentals of Photography (1-2)
IV. Mathematics, Science and Technology 12 sem. hours min.

**Maximum total of 2 credits from these courses may be counted toward the general education requirement in the Arts and Humanities area.**

*Course fulfills the world cultures general education requirement.*

### Chemistry
- **Chem 101** Fundamentals of Our Chemical World (ND:LABSC) (4)
- **Chem 104** Introductory Chemistry (ND:LABSC) (4)
- **Chem 105** General Chemistry I (ND:LABSC) (4)
- **Chem 106** General Chemistry II and Qualitative Analysis (ND:LABSC) (4)
- **Chem 107** Introduction to Organic and Biochemistry (ND:LABSC) (4)
- **Chem 151** Fundamental Concepts of Chemistry (with Chem 161 lab) (ND:LABSC) (4)
- **Chem 152** Inorganic Chemistry I (with Chem 162 lab) (ND:LABSC) (4)
- Chem 153 Analytical Chemistry (ND:LABSC) (3)
- Chem 162 Qualitative Analysis Laboratory (ND:LABSC) (3)

### Computer Science
- CSci 101 & 101L Introduction to Computers (only counts for GER if taken with lab simultaneously) (ND:COMPSC) (4)
- CSci 110 Computer Programming I (ND:COMPSC) (3)
- CSci 111 Computer Programming II (ND:COMPSC) (3)
- CSci 160 Computer Science I (ND:COMPSC) (4)
- CSci 161 Computer Science II (ND:COMPSC) (4)
- CSci 260 Programming Languages (ND:COMPSC) (3)
- 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 Intro to Weather and Climate (3)
- Geog 134 & 134L Intro to Weather and Climate (with lab) (ND:LABSC) (4)

### Geology
- Geol 100 Earth Science (ND:Sci) (4)
- 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 111 Views of Earth and Planetary History (ND:Sci) (4)
- Geol 111R Views: Recitation (1)
- **Geol 222 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)

### 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 204** Survey of Calculus (ND:Math) (3)
- **Math 211** Calculus I (ND:Math) (4)
- **Math 212** Calculus II (ND:Math) (4)
- **Math 213** Calculus III (4)

### Nutrition and Dietetics
- N&K 240 Fundamentals of Nutrition (3)

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

### Physics
- **Phys 101** Introductory College Physics (ND:LABSC) (4)
- **Phys 102** Introductory College Physics (ND:LABSC) (4)
- **Phys 171** Natural Science—Physics (4)
- **Phys 200** Physics for Poets (3)
- **Phys 203** General Physics (ND:LABSC) (4)
- **Phys 204** General Physics (ND:LABSC) (4)
- **Phys 205** General Physics (ND:LABSC) (4)
- **Phys 223** Astronomy (3)
- **Phys 223 & 223L** Astronomy (with lab) (ND:LABSC) (4)

### Psychology
- Psy 241 Introduction to Statistics (3)

### Sociology
- Soc 326 Sociological Statistics (3)
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 “Extracurricular 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 file a 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.

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 Registrar’s Office 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 or 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 the minimum acceptable standard score. Credit earned through CLEP Subject Exams may be used to fulfill University General Education requirements as outlined on pages 27-30; 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.

![EXAMINATION STANDARD SCORE UND COURSE]

**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 paid, 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 337. Students enrolled in Cooperative Education 337, irrespective of the number of actual credit hours, are granted full time equivalent 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 on page iv. 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.

**CHANGE OF REGISTRATION**

After a student has registered, he or she should consult with his or her advisor 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 p. iv.) Thereafter, a student may not cancel from 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 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 that credit. 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 Records.

**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 Records 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 on page iv.) 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 Affairs 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**

For a member of the freshman class, sixteen 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 twelve semester credits. The maximum amount of work in which a student shall be enrolled is left to the discretion of the academic advisor.

For most undergraduate colleges from fifteen to seventeen hours of class work a week in the normal load. A student wishing to enroll in more than 21 semester hours must obtain approval from his/her advisor 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:
The mark “I”, Incomplete, shall 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 so entered on a separate grade sheet. In addition, the instructor shall indicate on a separate form what grade the incomplete should automatically be converted to, if the student fails to complete the assigned work within the allowed time period. An “I” Incomplete, in a course taken for undergraduate credit must be completed during the first four weeks of the succeeding semester that the student is enrolled in institutional credit. An Administrative Procedures Committee petition for an extension of time of an incomplete may be submitted to the Office of Records by a student with the approval of the instructor of the course and the dean of the college offering the course. An “I” once recorded may be removed or converted as indicated above but cannot be expunged from the record. After seven years, all outstanding “Incomplete” grades will be marked as permanent “Incomplete.” A student may complete the course work to remove a permanent “Incomplete” after seven years with the permission of the chairperson of the department offering the course and the dean of the college offering the course.

If a student misses a final examination for reasons not satisfactory to the instructor, he or she is given an F. A student receiving a failure in a course shall not be allowed to pursue the continuation of that course before removing the failure. Any student receiving a failure in a course which is required in his/her curriculum must repeat the course at the earliest opportunity.

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.

Elective 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 course to substitute for or (c) request the Registrar’s Office to change the S-U grade 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 intact. 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 Records to a grade of S. Grades of D and F will be converted to U. Changes in registration or from S-U grading for fall and spring semesters may be made during the first five weeks of the semester. The deadline for that same activity during the Summer Session is determined by using a time guideline which is proportionate to that for the academic year (see Academic Calendar, p. iv).

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 class, 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.

REPETITION 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 advisor. Without this approval, 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 advisor, except in the Schools of Law, Medicine, and 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 advisor, 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 advisors 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 mailed to students at their home address approximately two weeks after the close of each semester and the summer session.

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 federal law 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 Admissions and Records, Box 8382, Grand Forks, ND 58202. Questions about the Family Educational Rights and Privacy Act (FERPA) should be directed to the Office of Admissions and Records.

Each transcript includes the student’s entire academic record to date and current academic status. Partial transcripts are not issued. The University of North Dakota does not do FAX transcripts.

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.

The Student Affairs Office will notify instructors if a student is hospitalized or absent due to a death in the family. This is not an excuse, but a notification of a student’s status. In other instances 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 on page 32 will apply.

No undergraduate student should be obligated 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 instructors 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.

CONDUCT IN GENERAL

A student is expected to know, 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, the Student Senate, 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 Student Affairs Office. 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 Affairs, and the Student Affairs 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 better 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 Affairs, 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. Bribing 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 a 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.

The Center for AEROSPACE SCIENCES

John D. Odegard, Dean

MISSION AND HISTORY

The principal mission of the Center for Aerospace Sciences is to preserve, create, and disseminate knowledge and to demonstrate the principled use of knowledge for and about aerospace, meteorology, 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 Center has earned national acclaim for its achievements in collegiate aviation education and atmospheric research. In just a few years, the Center 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 emerged at a rapid pace and, 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 in the nation accredited by the Council on Aviation Accreditation.

SCOPE

The college is comprised of four academic departments and five major research and support organizations. The Aviation Department offers undergraduate degrees in aerospace fields including flight, air traffic control, aviation business and management, and aviation education. With its roots in research, the Atmospheric Sciences Department’s undergraduate program offers students unique opportunities to participate in funded research using the department’s Digital Doppler radar, a customized Cessna Citation II research jet, and in operational forecasting enterprises. The graduate program in Space Studies offers an interdisciplinary approach to understanding our activities space by taking a look at the broad area of activities beyond Earth’s atmosphere and the use of extraterrestrial resources in space development. 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 the aerospace industry. To meet this challenge, the Department of Computer Science became a part of the Center in 1982 offering undergraduate and Master’s degrees.

To facilitate its unique mix of activities, the Center 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, and a Cray supercomputer. Working in consort, the Center’s Atmospheric Sciences Department, Space Studies Department, and Scientific Computing Center engage in multidisciplinary research as the Earth System Science Institute to better understand the earth’s complex environment and provide 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, transport, education, research, and broadcast weather forecasting and now-casting utilizing a vanguard approach to data gathering, storage, and analysis 24 hours a day. The Center 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 at the Grand Forks International Airport supports the flight training component of the Center’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 four-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

The Center’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. The fully integrated systems with advanced networking provide a wide range of computer support 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.

At Mark Andrews International Airport, the Center operates a modern flight training facility with a fleet of 66 aircraft including jets, turboprops and helicopters. Aviation students fly more than 90,000 flight hours in pursuit of their undergraduate aviation degrees. A new five-story office building with deli/cafeteria and two new hangars are among the recent additions to the newly expanded facility. Two new FAA facilities — a 90-foot air traffic control tower and an automated flight service station — are located within a short walking distance. A high-speed fiber optic link provides access to the Center’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**

To be eligible for admission to programs within the Center for Aerospace Sciences, the student must have completed at least twenty-four hours of credit and must have earned a minimum Grade Point Average (GPA) of 2.50.

**DEGREES AND REQUIREMENTS FOR GRADUATION**

The Degree of Bachelor of Science in Aeronautics or Bachelor of Science in Atmospheric Sciences is conferred upon a student who successfully fulfills the following requirements:

1. Complete the University’s General Education Requirements (see pages 27-30).
2. Earn a minimum Grade Point Average of 2.50 in all courses taken. (Note: transfer students must not only earn a minimum cumulative GPA of 2.50, but must also earn a minimum 2.50 average in work completed at the University of North Dakota).
3. Complete the curriculum for the major as outlined in the departmental listings.
4. Make formal application to the Registrar for the degree sought within four weeks of the beginning of the semester of expected graduation.

The **Department of Aviation** and the College of Business and Public Administration also award the degree of Bachelor of Business Administration with major in Aviation Management or Airport Management upon completion of curriculum outlined under specific departmental listings on page 62-68.

The **Department of Computer Science** and the College of Arts and Sciences award the degree of Bachelor of Science with major in Computer Science upon completion of curriculum outlined on pages 84-85. A minor in Computer Science may also be completed.

The **Department of Space Studies** offers a minor in space studies to introduce students to the variety of space 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.

**OTHER PROGRAMS**

**Cooperative Education.** The Center encourages its students to gain practical on-the-job experience in their chosen field prior to graduation. 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.

**Weather Modification Pilot Training.** This one-of-a-kind cooperative education 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 fly as weather modification pilots for the program must have a commercial certificate with instrument and multi-engine ratings.

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

**Youth Programs.** Special youth programs are offered to young people during the summer months. The Epoch Pilot Program, available to high school juniors, makes it possible to earn a private pilot certificate for college credit during the University’s summer session. The Aerospace Camp offers a ten-day summer program to introduce the excitement and challenge of aerospace to 8th, 9th, and 10th graders. Also, in conjunction with the FAA, the Center sponsors a 4-day Aviation Career Education Academy for North Dakota high school students.

**STUDENT ORGANIZATIONS**


**Student Aviation Advisory Council.** This six-member student advisory council is appointed by their peers to act as a liaison between students and aviation faculty. The group also sponsors monthly safety seminars and recognizes a student- and instructor-of-the-month.

**Student Aviation Management Association.** This organization, founded in 1975, has the honor of having been recognized as the first student chapter of the American Association of Airport Executives in 1983. Among its many professional development activities, SAMA hosts an annual seminar featuring aviation professionals from across the nation and Canada.

**Delta Chapter of Alpha Eta Rho.** The Delta Chapter of Alpha Eta Rho, an international aviation fraternity, stresses closer ties between students and the industry through education. Efforts to achieve this goal include providing free tutoring and awarding annual scholarships to aviation students. The group also sponsors the annual Parents’ Day, an opportunity for students to share the excitement of their education with parents.

**Wilderness Pilots Association.** Floatplane enthusiasts have their own special group to promote a better understanding of air safety as it relates to flying into remote areas. Activities include an annual fly-in, field trips, a four-day wilderness survival program, and first aid courses.

**Student Air Traffic Control Association.** This student organization provides opportunities for students interested in the fast-paced career of controlling air traffic. This group is involved with policies and procedures affecting their professions, and also provides a forum for hiring information and job opportunities.

**Association for Computing Machinery.** As the student branch of the National Association for Computing Machinery, this organization sponsors such events as computer programming contests, computer demonstrations, and tutorial programs. Weekly meetings with guest speakers and field trips provide valuable insight into the computer industry.

**American Meteorological Society.** The Lake Agassiz Student Chapter of the American Meteorological Society seeks to promote advancement and understanding of meteorology. This effort includes sponsoring community awareness seminars on severe weather and natural hazards. Other group activities include monthly meetings with guest speakers and field trips to weather services in Winnipeg and Minneapolis.
The College of ARTS AND SCIENCES

John Etting, Dean

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, secondary-school teaching, programming, translation, speech therapy, the justice system, government service—but 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. 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 activity in the arts and sciences, so that both undergraduate and graduate students can be exposed to, and take an active part in, the process of scholarship and the advancement of knowledge;
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 & Sciences may be admitted directly to the College. Students enrolled in other colleges at UND who decide on an A&S major may transfer to A&S 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

SERVICE

Service to the University, the community and the aerospace industry is a vital part of the Center’s mission. This commitment is typified by such activities as hosting aerospace education workshops, conducting airport management seminars, and sponsoring pilot/instructor refresher courses.

The Center also provides an air transportation service to fly faculty, staff, administrators, and students safely and efficiently on University business. A Cessna Citation and a variety of single-engine and multi-engine aircraft are available for this purpose. Students who have their commercial/instrument rating may fly as co-pilots.

During times of severe weather, atmospheric sciences faculty and their student assistants staff the Center’s Severe Weather Analysis Center around-the-clock to provide timely weather information to the general public. This work, conducted in cooperation with city emergency crews, is provided on a volunteer basis.

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, when George S. Thomas, a classicist, assumed office. He was followed in 1911 by Melvin A. Brannon, a biologist. Vernon P. Squires of the English Department was dean from 1914 to 1930; William G. Bek, a German scholar, served from 1930 to his death in 1948; he was succeeded by Robert Bonner Winner of the Physics Department, who was dean until 1965. Philip A. Boghile of the Mathematics Department was interim associate dean in 1965-66. Bernard O’Kelly, English, was dean from 1966-1995.

In 1929 the structure of a junior college and a senior college (in the same year renamed divisions) was adopted; the last vestiges of this structure remained until 1966, although it had been largely superseded in 1955 by the establishment of the University College, which enrolled freshmen. The University College was dissolved in 1994-95.

As a faculty of Arts and Sciences, the College structurally includes at present 14 academic departments: Anthropology, Biology, Chemistry, Communication Sciences and Disorders, English Languages and Literature, Geography, History, Indian Studies, Mathematics, Modern and Classical Languages, Philosophy and Religion, Physics, Psychology, and Sociology. The coordinator of the Honors Program and the coordinator and faculty of the Humanities and Integrated Studies Program are also members of the College’s faculty. The faculty of departments structurally located in other colleges — Communication, Computer Science, Economics, Geology, Music, Political Science, Theatre Arts and Visual Arts — 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.

As a college of students in the arts and sciences, the College enrolls all undergraduates who wish to complete studies for the Bachelor of 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, except that beginning in 1995, students in Communication and the Fine Arts fields enroll in the College of Fine Arts and Communication. 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.

The College is a member of the Council of Colleges of Arts and Sciences, the American Conference of Academic Deans, the Association of American Colleges and Universities, and the Mississippi Valley Deans’ Association.
some programs, e.g., 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 a natural science (biology and related fields, chemistry, geography, and physics). In Psychology and Computer Sciences there are separate requirements for the B.A. and B.S. Students in Mathematics may choose either degree, as may students with both science and non-science majors.

By following certain specified programs, students may also obtain one of the following special degrees: B.S. in Chemistry, B.S. in Criminal Justice Studies, B.S. in Fisheries and Wildlife Biology, and B.S. in Geology. (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) See pages 27-30.

II. Language Requirements. Generally for a degree from the College of Arts and Sciences a student must establish proficiency in a foreign language equivalent to that attained at the end of the fourth semester course in college (202 at this university.) This is known as Level IV proficiency. Certain programs, however, admit variations in this requirement, and students should consult the specific requirements of particular programs and departments. The language requirement, if any, and options are listed for each major under the heading, "Required in other departments." Any student doubtful about what his major will be is advised to establish language proficiency through coursework or other means as early as possible. For certain majors and concentrations, particular languages are preferred.

III. The Major or Concentration. Majors, basically a minimum of 30 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 beginning on page 58. Students should note particularly the requirements not only of the majors and concentrations, but, where appropriate, the accompanying requisites in other departments. In the Major (or concentration) students must have a grade point average of at least 2.0 by graduation.

Majors Available in the College

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<td>Communication Sciences and Disorders</td>
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<td>Economics</td>
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<td>English</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. They may also visit the College of Arts and Sciences Office where information on degree programs in interdisciplinary fields would be available. Students in general may plan such programs with the approval of the Dean and the departments involved.

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.

Teacher Certification 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. The major courses required under the B.S. Ed. degree must be completed as part of the major. Students wishing professional certification 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 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 listing on page 51.

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: Chemistry 105-106; Chemistry 305-306; Biology 101-102; and Physics 203-204. Calculus and other selected courses in Biology are also recommended. Because tomorrow's physician not only must be accomplished in medicine, but also concerned with the social problems of people and must be a leader in civic and community affairs, he/she needs to have a liberal 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 on page 52.

Other Professional Schools. Students may obtain information on the best preparation for schools of dentistry, pharmacy, optometry, veterinary medicine, etc. from the Arts and Sciences Office.

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 pre-professional programs.

Pre-Dental

Most dental schools now 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, inorganic chemistry, and organic chemistry. Some schools require additional specific courses. For information on dental schools and their requirements consult with the Dean’s Office in the College of Arts and Sciences.

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 101, 102</td>
<td>Composition I and II</td>
<td>(6)</td>
</tr>
<tr>
<td>Chem 105, 106</td>
<td>General Chemistry and Qual. Analysis</td>
<td>(8)</td>
</tr>
<tr>
<td>Biol 101, 102</td>
<td>Introduction to Biology</td>
<td>(8)</td>
</tr>
<tr>
<td>Math 103</td>
<td>College Algebra</td>
<td>(3)</td>
</tr>
<tr>
<td>Elective (or Comm 161)</td>
<td></td>
<td>(3)</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 103</td>
<td>Calculus I</td>
<td>(3)</td>
</tr>
<tr>
<td>Phys 101, 102</td>
<td>Introductory College Physics</td>
<td>(8)</td>
</tr>
<tr>
<td>or Phys 203, 204</td>
<td>General Physics</td>
<td>(8)</td>
</tr>
<tr>
<td>Chem 305, 306</td>
<td>Organic Chemistry</td>
<td>(10)</td>
</tr>
<tr>
<td>Psy 101</td>
<td>Introduction to Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>Elective (literature, Latin words, history, science, etc.)</td>
<td>(3)</td>
<td></td>
</tr>
</tbody>
</table>
Pre-Mortuary Science
The following program is designed to meet the two-year requirement in pre-mortuary science. Ordinarily this program could 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.

Freshman Year
- Engl 101, 102: Composition I and II (6)
- Bisd 101, 102: Introduction to Biology (8)
- Psy 101: Introduction to Psychology (3)
- Comm 161: Fundamentals of Public Speaking (3)
- Electives (3-6)

Sophomore Year
- Chem 105, 106: General Chemistry and Qual. Analysis (8)
- Biol 101, 102: Introduction to Biology (8)
- Math 103: College Algebra (3)
- Math 104: Trigonometry (2)
- Math 105: College Algebra (3)
- Math 106: Trigonometry (2)
- Math 107: Calculus (3)
- Math 108: Calculus (3)
- Math 109: Calculus (3)
- Phys 201, 204: General Physics (8)
- Phys 203, 204: General Physics (8)
- Chem 105, 106: General Chemistry and Qual. Analysis (8)
- Phys 201, 204: General Physics (8)
- Soc 101: Introduction to Sociology (3)
- Psy 101: Introduction to Psychology (3)
- Sociology or Social Sciences (3)
- Humanities, Social Science, or Electives (6-8)

Pre-Optometry
The requirements for admission into a school of optometry are highly variable, but students must normally complete at least three years of college. All optometry schools require at least one year of biology, physics, and chemistry; almost all require at least one course in organic chemistry; and most require calculus. Additional specific courses are required by each school. Consult with the Dean of the College of Arts and Sciences for schools and requirements.

Freshman Year
- Engl 101, 102: Composition I and II (6)
- Math 103: College Algebra (3)
- Math 104: Trigonometry (2)
- Bisd 101, 102: Introduction to Biology (8)
- Electives (3-6)

Sophomore Year
- Chem 105, 106: General Chemistry and Qual. Analysis (8)
- Biol 101, 102: Introduction to Biology (8)
- Math 103: College Algebra (3)
- Math 104: Trigonometry (2)
- Math 105: College Algebra (3)
- Math 106: Calculus (3)
- Math 107: Calculus (3)
- Math 108: Calculus (3)
- Math 109: Calculus (3)
- Phys 201, 204: General Physics (8)
- Phys 203, 204: General Physics (8)
- Chem 105, 106: General Chemistry and Qual. Analysis (8)
- Phys 201, 204: General Physics (8)
- Soc 101: Introduction to Sociology (3)
- Psy 101: Introduction to Psychology (3)
- Sociology or Social Sciences (3)
- Humanities, Social Science, or Electives (6-8)

Pre-Veterinary Medicine
The requirements for admission into a school of veterinary medicine are highly variable, but students must normally complete at least three years of college. All veterinary schools require at least one year of biology, physics, and chemistry; almost all require at least one course in organic chemistry; and most require calculus. Additional specific courses are required by each school. Consult with the Dean of the College of Arts and Sciences for schools and requirements.

Freshman Year
- Engl 101, 102: Composition I and II (6)
- Math 103: College Algebra (3)
- Math 104: Trigonometry (2)
- Bisd 101, 102: Introduction to Biology (8)
- Electives (3-6)

Sophomore Year
- Chem 105, 106: General Chemistry and Qual. Analysis (8)
- Biol 101, 102: Introduction to Biology (8)
- Math 103: College Algebra (3)
- Math 104: Trigonometry (2)
- Math 105: College Algebra (3)
- Math 106: Calculus (3)
- Math 107: Calculus (3)
- Math 108: Calculus (3)
- Math 109: Calculus (3)
- Phys 201, 204: General Physics (8)
- Phys 203, 204: General Physics (8)
- Chem 105, 106: General Chemistry and Qual. Analysis (8)
- Phys 201, 204: General Physics (8)
- Soc 101: Introduction to Sociology (3)
- Psy 101: Introduction to Psychology (3)
- Sociology or Social Sciences (3)
- Humanities, Social Science, or Electives (6-8)

HONORS AND INDEPENDENT STUDY
Students in the College are encouraged to take advantage of the educational opportunities offered by the Four-Year Honors Program, page 5, 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 honor 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 Arneberg 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
Three research institutes, the Institute for Ecological Studies, the Institute for Remote Sensing, and the Social Science Research Institute, are lodged in the college. In addition, through its various departments, the College of Arts and Sciences provides a variety of special services and facilities such as the Psychological Services Center (Psychology Department); the Speech, Language, and Hearing Clinic (Department of Communication Disorders); the Center for the Study of Cultural and Social Change (Sociology Department); and the U.S. Weather Bureau Observation Station and Astronomy Observatory (Geography Department). In addition, all departments of the College engage in general and specialized research.

The College of BUSINESS AND PUBLIC ADMINISTRATION

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 American Assembly of Collegiate Schools of Business (AACSB) since 1984, and the MBA program has had AACSB accreditation since 1990.

MISSION
The mission of the College of Business and Public Administration is to meet its responsibilities to its students, the University, and State by:

1. Offering accredited undergraduate programs of overall high quality in general and public accounting, airport management, aviation management, business economics, banking and financial economics, financial management, information management, management, and marketing.
2. Offering an accredited Master of Business Administration program of overall high quality in conjunction with the Graduate School.
3. Offering an undergraduate public administration program of overall high quality and, in conjunction with the Graduate School, a graduate public administration program of overall high quality.

4. Offering undergraduate industrial technology programs of overall high quality and, in conjunction with the Graduate School, a graduate industrial technology program of overall high quality.

5. Offering high quality undergraduate political science and economics programs in conjunction with the College of Arts and Sciences and, in conjunction with the College of Arts and Sciences and the Graduate School, a graduate political science program of overall high quality.

6. Offering high quality undergraduate and graduate business education programs in conjunction with the College of Education and Human Development and the Graduate School, respectively.

7. Engaging in ongoing evaluation of program and course offerings.

8. Engaging in research and scholarly activity for the benefit of students, and for contribution of new knowledge to the State, region, and nation.

9. Providing economic development assistance to the State and region.

10. Providing educational opportunities, consistent with quality and resource considerations, throughout the State for those who cannot come to the campus.

CURRICULA IN THE COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION

Nine 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: Accounting, Aviation Management, Business Economics, Banking and Financial Economics, Business Management, Information Management, Management, 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 beginning on page 58. In order to assist business students preparing for careers in the global economy, the College offers a minor in International Business (see Business Administration, page 71) and the College of Arts and Sciences offers minor programs in languages, including some (e.g., French) that have an orientation in business.

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. Completed the six Pre-Business Core courses (Acct 200 & 201; BVED 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 page 139 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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 101</td>
<td>Composition I</td>
<td>3</td>
</tr>
<tr>
<td>Engl 102</td>
<td>Composition II</td>
<td>3</td>
</tr>
<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>Math 104</td>
<td>Finite Math</td>
<td>3</td>
</tr>
<tr>
<td>Math 204</td>
<td>Survey of Calculus</td>
<td>3</td>
</tr>
<tr>
<td>PSCI 101</td>
<td>American Government I</td>
<td>3</td>
</tr>
<tr>
<td>Comm 161</td>
<td>Fundamentals of Public Speaking</td>
<td>3</td>
</tr>
</tbody>
</table>

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, take English 209 instead of English 102, and take Computer Science 110.

Students desiring to major in Information Management must take Psychology 101 instead of Sociology 101 or Anthropology 171.

Students desiring to major in Management must take Psychology 101. In addition, Sociology 101 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. 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 pages 27-31), 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 2.20 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 2.20 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 program, 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, Finance, Industrial Technology, Information Management, 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 department, while at the same time receiving academic credit. Students desiring Cooperative Education positions should contact the department head of their major field of study.

Small Business Institute (SBI). The College has established a Small Business Institute in cooperation with the United States Small Business Administration. Students enrolled in this program study the problems of an actual business and make recommendations for improving the operation.

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.), Master of Science with major in Industrial Technology, and Masters degrees in Business and Vocational Education. The master of Business Administration program is accredited by the American Assembly of Collegiate Schools of Business. Students interested in graduate study in these areas should consult the Graduate School catalog for descriptions of these degree programs.

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; video display equipment for in-class computer aided instruction; and video tape players with large screen monitors. Pit style classrooms in Gamble Hall are designed in amphitheater format to facilitate case study instruction. Study carrels are also 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 now 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.

THE 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 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 linkage between the North Dakota University System and the private sector by providing one-to-one counseling, training and outreach assistance through five regional centers, an outreach center and a procurement technical
assistance center located throughout the state. In partnership with the University System, the U.S. Small Business Administration and the State of North Dakota, 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, resume/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.

EAGLE PROJECT

In the Fall of 1994 the Eagle Project was initiated to increase Native American enrollments in the College. This project is intended to establish a connection between American Indian business leaders on and off the reservation and the College. This Connection will fulfill the educational needs of American Indian business leaders and students in the areas of entrepreneurship and economic development. The program is designed to identify, recruit, retain, and graduate top quality American Indian students from the College of Business and Public Administration.

BPA STUDENT COUNCIL

The College of Business and Public Administration Student Council (BPC) of the University of North Dakota, founded in 1996, is a student organization representing all departments of the College of Business & Public Administration. The BPC 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 & Public Administration. Some of the council’s activities include hosting the annual BPA conference and presenting the William Frederick Lawrence Outstanding Achievement Award. BPC 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, Financial Management Association, Information Management Club, Management Club, MBA Student Association, Native American Business Leaders, Society of Manufacturing Engineers, Students in Free Enterprise.

HONOR SOCIETIES

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, Sigma Iota Epsilon.

The Division of CONTINUING EDUCATION

Robert Boyd, Dean

HISTORY AND MISSION

An organized program of extension activities was first established at the University of North Dakota in 1910. Since 1921 the University has been a member of the National University Extension Association. The Association promotes and upholds standards for extension services by imposing strict procedures for the admission of colleges and universities. Outreach Programs is also an active member of the Council on General Extension of the National Association of State Universities and Land Grant Colleges.

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.

The mission of the Division of Continuing Education is to promote lifelong learning and to offer quality educational opportunities by extending the resources of the University. The Division attempts to determine the educational and informational needs of the citizenry of North Dakota which 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: correspondence study, educational television courses, extension courses, conferences, seminars, workshops, Summer Session, Learning After Hours, a Resident Center at the Grand Forks and Minot Air Force Bases and Extended Graduate Degree Programs at the UND Graduate Center at Bismarck and other locations in the state.

DEPARTMENT OF ACADEMIC PROGRAMS

Extension Classes

Extension classes are regular University of North Dakota class es offered at locations distant from the University. They are intended to meet the needs of: (1) those who cannot immediately leave home after finishing high school to continue their formal education, (2) those who have had their education interrupted, (3) those who would like to broaden their professional and cultural background and (4) those who are working toward an advanced degree. These classes are also available to adults who can profit from the experience, but are not working in a degree program.

Qualified instructors, approved by the chairperson and the dean of the academic department involved, conduct the classes where the demand warrants. The size of the class required in each instance depends upon the distance the instructor must travel to class. The number and length of the class periods are determined by the amount of credit allowed for the course, based on a minimum of fifteen hours of class per credit hour.

Requests for additional information concerning the establishment of off-campus classes should be addressed to the Division of Continuing Education, University of North Dakota, Box 9021, University Station, Grand Forks, ND 58202-9021.

Learning After Hours

The Division of Continuing Education provides evening classes at the Grand Forks Air Force Base and evening and weekend classes on
campus. This convenient schedule makes it possible for students who would otherwise be unable to attend classes to continue their education.

Courses designed to meet general education requirements are offered fall and spring semester on campus and in five terms at the Grand Forks Air Force Base. Upon completing the general education requirements, many students matriculate to the University campus to seek undergraduate degrees.

Additionally, the College of Business and Public Administration and the Division of Continuing Education offer a B.B.A. in Business Administration through the Learning After Hours program.

Further information on the Learning After Hours Programs at the Grand Forks Air Force Base and on the University campus may be obtained by contacting the Division of Continuing Education, University of North Dakota, Box 9021, Grand Forks, ND 58202-9021 or by calling (701) 777-3000 or toll-free 1-800-342-8230. Information on non-credit courses may be obtained by calling (701) 777-2404 or toll-free 1-800-342-8230 or writing to the address above.

Courses available by Correspondence Study are:

**Accounting and Business Law**
- 200 Elements of Accounting, 3 credits
- 201 Elements of Accounting, 3 credits

**Anthropology**
- 170 Introduction to Biological Anthropology, 3 credits
- 171 Introduction to Cultural Anthropology, 3 credits
- 340 Medical Anthropology, 3 credits

**Business and Vocational Education**
- 421 Coordinating Techniques, 2 credits
- 444 Philosophy of Vocational Education, 3 credits

**Chemical Engineering**
- 201 Stoichiometry, 3 credits

**Computer Science**
- 101 Introduction to Computers, 3 credits
- 101L Introduction to Computers Laboratory, 1 credit
- 110 Computer Programming I, 3 credits

**Economics**
- 105 Elements of Economics, 3 credits
- 201 Principles of Microeconomics, 3 credits
- 202 Principles of Macroeconomics, 3 credits

**English Language and Literature**
- 101 Composition I, 3 credits
- 102 Composition II, 3 credits
- 209 Technical and Business Writing, 3 credits
- 211 Introduction to Fiction, 2 credits
- 303 Survey of American Literature, 3 credits
- 304 Survey of American Literature, 3 credits
- 365 Black American Writers, 3 credits

**Fine Arts**
- 150 Introduction to Fine Arts, 3 credits

**Geography**
- 151 Cultural Geography, 3 credits
- 161 World Regional Geography, 3 credits
- 319 Geography for Teachers, 2 credits
- 362 Geography of Canada, 3 credits
- 369 Geography of North Dakota, 3 credits

**History**
- 101 Western Civilization to 1500, 3 credits
- 102 Western Civilization since 1500, 3 credits
- 103 United States to 1877, 3 credits
- 104 United States since 1877, 3 credits

**Humanities**
- 101 Humanities I, 4 credits
- 102 Humanities II, 4 credits

**Industrial Technology**
- 440 Industrial Safety, 2 credits

**Languages: Modern and Classical**

**French**
- F101 Beginning French, 4 credits
- F102 Beginning French, 4 credits
- F201 Second-Year French, 4 credits
- F202 Second-Year French, 4 credits

**German**
- G101 Beginning German, 4 credits
- G102 Beginning German, 4 credits

**Norwegian**
- N101 Beginning Norwegian, 4 credits
- N102 Beginning Norwegian, 4 credits
- N201 Second-Year Norwegian, 4 credits
- N202 Second-Year Norwegian, 4 credits

**Spanish**
- S101 Beginning Spanish, 4 credits
- S102 Beginning Spanish, 4 credits
- S201 Second-Year Spanish, 4 credits
- S202 Second-Year Spanish, 4 credits

**Management**
- 305 Managerial Concepts, 3 credits

**Mathematics**
- 102 Intermediate Algebra, (Does not count towards graduation at UND) 3 credits
- 103 College Algebra, 3 credits
- 104 Finite Mathematics, 3 credits
- 105 Trigonometry, 2 credits
- 208 Discrete Mathematics, 3 credits
- 211 Calculus I, 4 credits
- 212 Calculus II, 4 credits
- 213 Calculus III, 4 credits
- 351 Elementary Differential Equations, 3 credits

**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

**Pharmacology and Toxicology**
- 304 Human Pharmacology, 3 credits
- 410 Drugs Subject to Abuse, 2 credits

**Philosophy and Religion**
- Phil 210 Contemporary Moral Issues, 3 credits
- Rel 101 Introduction to Religion (West), 3 credits
- Rel 203 World Religions, 3 credits
- Rel 345 Death and Dying, 2 credits

**Psychology**
- 101 Introduction to Psychology, 3 credits
- 241 Introduction to Statistics, 4 credits
- 251 Developmental Psychology, 4 credits
- 331 Behavior Modification, 3 credits
- 355 Adulthood and Aging, 3 credits
- 360 Introduction to Personality, 3 credits
- 361 Social Psychology, 4 credits
- 370 Abnormal Psychology, 3 credits

**Sociology**
- 101 Introduction to Sociology, 3 credits
- 102 Social Problems, 2 credits
- 331 Rural Sociology, 3 credits
- 335 The Family, 3 credits
- 352 Aging, 3 credits
- 353 Sociology of Death and Dying, 3 credits
- 361 Social Psychology, 4 credits

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

**Non credit Courses**

**Food Service and Nutrition**
- Diabetes Nutrition Therapy, 2.5 Continuing Education Units
- Dietary Managers Course, 27 Continuing Education Units
- Food Safety: HACCP, 2.5 Continuing Education Units
- Introductory Nutrition for Dietary Personnel, 4.8 Continuing Education Units
- Menu Planning for Health Care Facilities, 3.0 Continuing Education Units
- Nutrition and Aging, 3.5 Continuing Education Units
- Nutrition Therapy for Dietary Personnel, 4.8 Continuing Education Units

**Mathematics**
- Math 100, A Refresher Course in Mathematics, 5.4 Continuing Education Units

**Real Estate**
- Mortgage Analysis Concepts and Techniques, 7 Continuing Education Units
The Appraisal Process, .7 Continuing Education Units
Real Estate Brokerage Liability, .7 Continuing Education Units
Closing Real Estate Transactions, .7 Continuing Education Units
North Dakota Principles of Real Estate, Pre-Licensure Course, presented on the North Dakota Interactive Video Network, 3.6
Continuing Education Units

Regularly enrolled University students may enroll in the Division’s extension or correspondence study courses upon providing written approval from the Dean of their college.

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

Further information may be obtained by writing the Division of Continuing Education, University of North Dakota, Box 9021, Grand Forks, ND 58202-9021, or phoning (701) 777-2661, or Toll-Free 1-800-342-8230.

Admission

A correspondence study student or an extension class student is not required to apply for admission to the University. If correspondence study or extension class students later desire to be admitted to the University for study in residence, a regular and separate application must be filed with the Office of Admissions.

Upon satisfactory completion of a course, correspondence study grades are forwarded to the Registrar’s Office. Transcripts may be requested from the Registrar’s Office and may be sent to another institution upon written request.

General Information for Bismarck/Mandan Area

Information and requests concerning any of the Division of Continuing Education programs or activities for residents of the Bismarck/Mandan area may be directed to the UND Graduate Center at Bismarck, 1200 College Drive, Bismarck State College, Bismarck, North Dakota 58501. Telephone (701) 224-5437.

Office of Conference Services

The Office of Conference Services offers the rich resources of the University of North Dakota shaped to fit conference and seminar needs. These services can be provided to ensure a program’s success: professional program development, financial management, promotion, registration, instructional support, program management, evaluation, and record keeping. For more information about Conference Services, call (701) 777-2663 or 1-800-342-8230.

Office of Correspondence Programs (Non Credit)

The Office of Correspondence Programs (Non Credit) offers courses through self-study. Most of the courses are aimed at professional development including the Dietary Managers Course and the Real Estate courses. For more information, call (701) 777-4204 or 1-800-342-8230.

Office of Management Development

The Office of Management Development offers management supervisory, and professional development seminars. These seminars are offered to the public or presented to a private audience at a business location. To ensure the success of these seminars, program leaders are selected from the faculty and staff at UND, professional consultants and trainers, and area business professionals. For more information, call (701) 777-5633 or 1-800-342-8230.

The College of EDUCATION AND HUMAN DEVELOPMENT

Mary Harris, 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; Health, Physical Education, and Recreation; 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 strives to fulfill, and is the organizing unit for, the University of North Dakota’s mission in the areas of education and human services. Our mission is to advance the quality of education for undergraduate and graduate students, as well as practicing professionals concerned with the promotion of healthy lifestyles and lifelong learning and development. We strive to provide creative, dynamic programs that exemplify effective practice and scholarly inquiry, recognizing the interactions of theory, practice, and reflective practice.

The College engages in the development of theory, practice, and scholarship essential to the advancement of our disciplines. We are committed to the encouragement of interdisciplinary efforts and to increased understanding of our multicultural society.

The work of the College includes service to the university and community at large through collaborations with schools, families, social services, businesses, policy makers, government, and other constituencies.

As the organizing college for UND programs leading to teacher certification, the College coordinates policies which pertain to all teacher education students, including students completing degrees in other colleges.

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 Recreation 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 health, physical education, and recreation 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 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 2002. Programs in social work are accredited by the Council on Social Work Education. Programs in counseling are 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.

- Health, Physical Education and Recreation
  - B.S. in Physical Education
  - B.S. in Recreation and Leisure Services
- Social Work
  - B.S. in Social Work
- Teaching and Learning
  - 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/Mathematics Education
  - B.S.Ed. with major in Elementary/Music Education
  - B.S.Ed. with major in Elementary/Physical Education
  - B.S.Ed. with major in Elementary/Vocational Education
  - B.S.Ed. with major in Middle/Junior High Education
  - B.S.Ed. with major in Science Education (secondary)
  - B.S.Ed. with major in Social Science Education (secondary)

**CERTIFICATION REQUIREMENTS**

Admission to Teacher Education

Regardless of the college in which their degree is being earned or their degree status, students interested in teacher certification must make formal application to Teacher Education. Students apply for admission after completion of 45 semester hours, normally while enrolled in an entry level course of one of the teacher education programs: T&L 330 Introduction to Teaching and Learning; T&L 350 Development and Education of Adolescents; or T&L 200 Exploring Teaching. Students transferring an entry level course from another institution apply in the first semester of enrollment at the University of North Dakota. Application materials are available in the office of the Dean of the College of Education and Human Development.

Admission to Teacher Education requires a minimum GPA of 2.50; completion of a written statement which conveys commitment, experience, and interests appropriate to becoming a teacher; and ability to express oneself clearly and effectively. A personal interview may be required as part of the application process.

Applications are screened by committees after the first Fridays in October and February. Notification of admission status is normally made within 20 working days.

**GRADUATION AND TEACHER CERTIFICATION 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 2.50, and meet the legal requirements, are eligible for certification to teach in North Dakota. Students apply to the North Dakota Education Standards and Practices Board for certification using forms that are available in the Office of the Dean of Education and Human Development. Application should be initiated prior to graduation. Students interested in teacher certification 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. Application for student teaching is made for the spring semester by October 1 and for the fall semester by February 15. 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/Junior High 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 2.50 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 2.50, 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 science may be limited by the availability of cooperating teachers.

OTHER PROGRAMS OF THE COLLEGE

Cooperative education. The College of Education and Human Development encourages students to gain on-the-job experiences in their chosen fields prior to graduation. Cooperative Education experiences allow students to secure salaried, career-related work experiences under the supervision of both a supervising employer and the appropriate academic department while receiving academic credit. Please note, however, that student teaching, required in all teacher education programs is unpaid, as specified by North Dakota law.

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 major in Physical Education is offered by the faculty in the Department of Health, Physical Education, and Recreation. The Department of Counseling offers graduate programs leading to the M.A. with major in Counseling and to the Ph.D. with 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 major in Educational Administration. The Department of Teaching and Learning offers programs leading to the M.S. with majors in Early Childhood Education and General Studies in 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 Ed.D. and Ph.D. with major in Teaching and Learning.

The School of ENGINEERING AND MINES

Don Richard, Dean

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, Geological Engineering, Geology, and Mechanical Engineering. All programs are supported by well-designed and well-equipped laboratories.

MISSION

The major mission of SEM is to provide students a broad education coupled with strong engineering fundamentals that prepares new graduates to successfully fill important positions, both technical and non-technical, in industry and government. The graduate must have a solid background in technical subjects, the ability to think and work accurately, breadth and clearness of vision, and high ideals and purposes. SEM’s further mission is to engage in research and scholarly activity that contributes basic and applied knowledge for the benefit of students and also the state, region and the nation.

The School further provides engineering programs of equal quality to industry through the Corporate Engineering Degree Program. Continuous and on-going assessment and program evaluation by students, alumni, employers and industry advisory groups provide opportunities to measure success in meeting the mission of the School of Engineering and Mines.

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 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.
ADMISSION POLICY

Admission to the University and the School of Engineering and Mines. Students planning to receive a baccalaureate degree in engineering will be admitted 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.

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.

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</th>
<th>UND Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Chemistry</td>
<td>4</td>
<td>Chem 105 or 151 and 161</td>
</tr>
<tr>
<td>English Composition</td>
<td>6</td>
<td>Eng 101 and 209 or 102</td>
</tr>
<tr>
<td>Calculus</td>
<td>12</td>
<td>Math 211 and 212 and 213</td>
</tr>
<tr>
<td>General Physics (calculus-based)</td>
<td>8</td>
<td>Phys 205 and 206</td>
</tr>
</tbody>
</table>

2. An additional science course which may be prescribed by each admitting department.

3. 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.

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 course work from other institutions that will meet the School of Engineering and Mines’ requirements.

Degree Program Application Deadlines. Students will apply for admission to a professional degree program during the term in which they are completing the foundation course work (normally the fourth semester). Applications must be received by March 1. Applications will be reviewed only once per year.

Notice of admission status will be mailed by April 1.

Selection and Admission Process for 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. earning at least a C grade in each of the foundation courses

2. the GPA earned in the foundation courses and all other engineering courses completed at the time of application for admission

3. 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.

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

Reapplication 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 specifically listed 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 Dean of the School of Engineering and Mines.
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.

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.

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.

FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 105, 106</td>
<td>General Chemistry and Qualitative Analysis</td>
<td>(4)</td>
</tr>
<tr>
<td>Engl 101</td>
<td>Composition</td>
<td>(3)</td>
</tr>
<tr>
<td>Engr 101</td>
<td>Introduction to Engineering and Design</td>
<td>(2)</td>
</tr>
<tr>
<td>Engr 102</td>
<td>Descriptive Geometry</td>
<td>(2)</td>
</tr>
<tr>
<td>Math 211, 212</td>
<td>Calculus I, II</td>
<td>(4)</td>
</tr>
<tr>
<td>Phys 205</td>
<td>General Physics</td>
<td>(4)</td>
</tr>
</tbody>
</table>

SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 300</td>
<td>Analytical Mechanics (Statics)</td>
<td>(2)</td>
</tr>
<tr>
<td>CE 301</td>
<td>Mechanics of Materials I</td>
<td>(3)</td>
</tr>
<tr>
<td>CE 305</td>
<td>Analytical Mechanics (Dynamics)</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 201</td>
<td>Principles of Economics I</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 206</td>
<td>Electrical Engineering Fundamentals</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 209</td>
<td>Technical and Business Writing</td>
<td>(3)</td>
</tr>
<tr>
<td>(or Engl 102)</td>
<td>Computer Applications in Engineering</td>
<td>(2)</td>
</tr>
<tr>
<td>Math 213</td>
<td>Calculus III</td>
<td>(4)</td>
</tr>
<tr>
<td>Math 351</td>
<td>Applied Mathematics</td>
<td>(3)</td>
</tr>
<tr>
<td>Phys 206</td>
<td>General Physics</td>
<td>(4)</td>
</tr>
</tbody>
</table>

Outlines for all four-year curricula are found in the Courses of Instruction section of the catalog beginning on page 58. 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 (GER’s; see page 27-30). Students enrolled in Engineering programs must complete Philosophy 370, Ethics in Engineering and Sciences, and Economics 201, Microeconomics. In addition, within the GER Arts and Humanities or Social Science areas, there must be at least five (5) semester credits in one department. All Engineering students should plan carefully the fulfillment of their university GER’s so that they are inclusive of these Engineering Program Requirements.

INTEGRATED MASTER OF ENGINEERING PROGRAM
The Integrated Master of Engineering program provides an opportunity for selected students to work concurrently toward both the baccalaureate and Master of Engineering degrees. Those students will be able to complete both degrees in a total of five years and will be qualified to directly enter the engineering profession at an advanced level with special competence in engineering design.

Admission Requirements:
Students may be admitted to the Integrated Master of Engineering program if they:
1. Have completed a minimum of 90 semester credits toward an engineering baccalaureate degree;
2. Have completed a minimum of 36 semester credits of approved engineering courses;
3. Have demonstrated the academic achievement necessary to pursue advanced study in engineering by attaining a GPA of at least 2.50 for all previous work.

Interested students should apply for admission to this program early during the second semester of the junior year on forms available from the UND Graduate School. Those admitted will receive a letter from the Dean of the Graduate School to that effect, and their academic transcripts will be marked accordingly.

STUDENT ORGANIZATIONS

Student Societies. There are student chapters of each of the following professional and technical societies; American Institute of Chemical Engineers (AIChE), American Institute of Mining Engineers (AIME), 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 National Association of Collegiate Entrepreneurs (ACE), 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 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, AIME, ASCE, ASME, IEEE and SWE; the vice presidents of Eta Kappa Nu, Sigma Gamma Epsilon, and Tau Beta Pi; the engineering student senator; and the editor of The North Dakota Engineer II.

UND SCHOOL OF ENGINEERING AND MINES FOUNDATION
The School of Engineering and Mines Foundation is the beneficiary of the School of Engineering and Mines Foundation, a not-for-profit North Dakota educational and research corporation. The Foundation facilitates the School’s commercialization and transfer of technologies arising out of individual faculty research activity. To support technology commercialization around the world, the Foundation administers Environmental and Energy Research International, Ltd., based in Hong Kong and the Technology Transfer Office in Europe located in Recklinghausen, Germany.
The College of Fine Arts and Communication

Bruce C. Jacobsen, Dean

SCOPE AND MISSION

The College of Fine Arts and Communication originated in 1971 as the College of Fine Arts. A 1994 reorganization merged the School of Communication with the College of Fine Arts to create the new college. The College of Fine Arts and Communication offers students unique advantages as the only major academic division dedicated solely to the fine arts and communication disciplines. The College’s faculties in the departments of Music, Theatre Arts, and Visual Arts as well as the School of Communication comprise the largest community of creative artists, musicians, theatre practitioners, and communication specialists working together in the state.

The mission of the College of Fine Arts and Communication is to provide, through both instructional and extracurricular programs, opportunities for students who are interested in the fine arts and communication as a profession, as well as for those who wish to participate in and acquire a greater understanding and appreciation of the fine arts and communication. In conjunction with the offerings of the College’s faculty members, nationally known artists, professionals, and scholars in each of the disciplines regularly visit the campus to share their expertise with both faculty and students.

FACILITIES

The Departments of Music and Visual Arts occupy the Edmond A. Hughes Fine Arts Center, an award-winning structure of more than 91,000 square feet, which houses outstanding facilities consisting of classrooms, rehearsal rooms, studios, shops, offices, and the Josephine Campbell Recital Hall. The Department of Theatre Arts utilizes the Burtness Theatre for its production program with department offices, studio and support facilities in adjacent Chandler Hall, one of the original buildings on the campus. The School of Communication is housed primarily in O’Kelly Hall. In addition to these facilities, the cultural life of the campus is enhanced by the programs of the Chester Fritz Auditorium, a 2400-seat performance facility, the North Dakota Museum of Art, the Northern Lights Public Radio, and the Native Media Center.

DEGREES

Undergraduate students in the College of Fine Arts and Communication may pursue the Bachelor of Arts, Bachelor of Music, Bachelor of Science in Education, or the Bachelor of Fine Arts degrees. Graduate degrees offered are the Master of Music, Master of Arts in Theatre Arts, Master of Arts in Communication, and Master of Fine Arts in Visual Arts.

The degree programs in the College of Fine Arts and Communication are pre-professional programs in the disciplines of music, theatre arts, and communication. The programs of the Departments of Music, Visual Arts, and Theatre Arts are accredited by the National Association of Schools of Music, the National Association of Schools of Art and Design, and the National Association of Schools of Theatre, respectively.

ADMISSION

Admission to the College of Fine Arts and Communication does not necessarily carry with it admission to a program or major in the College. Please see Music, Theatre Arts, Visual Arts or School of Communication for individual admission requirements.

DEGREE REQUIREMENTS

All candidates for degrees from the College of Fine Arts and Communication must complete the following requirements:

2. Major discipline curriculum as outlined under the specific department.
3. Minimum of 10 semester hours completed outside the College of Fine Arts and Communication (in addition to general education requirements).
4. Minimum of 6 semester hours of electives in Fine Arts courses from departments other than the major discipline.

Teacher Certification: Students who complete the requirements for the Bachelor of Music degree in Music Education are certified to teach music K-12 in the state of North Dakota. To be eligible for student teaching, one of the final components of the degree program, students must have a minimum of a 2.75 Grade Point Average (GPA) in their major and a 2.50 GPA overall in coursework attempted prior to application.

Students who are interested in Visual Arts teacher certification for secondary education or the Bachelor of Science in Education with a major in Communication may fulfill those requirements while pursuing their degrees in the College of Fine Arts and Communication. A coordinate program with the Center for Teaching and Learning makes this possible. To be accepted for student teaching, applicants are required to have a minimum of a 2.75 GPA in their major and a 2.50 GPA overall in coursework attempted prior to application.

Graduate Studies: The departments of Music, Theatre Arts, Visual Arts, and School of Communication offer, through the Graduate
The Graduate School

Harvey R. Knurl, 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 (about 1,500 students) and most diversified (47 programs) graduate program in the region. A number of unique facilities and support resources augment the instructional and research program.

Each year approximately 400 new students enroll for degrees in the Graduate School, and approximately 270 students receive master’s degrees and 40 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

The degrees conferred for graduate work are the Master of Arts, Master of Science, Master of Education, Master of Business Administration, Master of Engineering, Master of Fine Arts, Master of Music, Master of Physical Therapy, Master of Public Administration, Master of Social Work, Doctor of Arts, Doctor of Education and Doctor of Philosophy. The Specialist’s Diploma is offered in Educational Administration.

GRADUATE PROGRAMS

The University offers work leading to the doctorate in 16 fields. Forty-four 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 the Graduate School Section of this Catalog. Courses with 500- and 900-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, carry graduate credit toward 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 address inquiries to the Dean of the Graduate School, Box 8178, University of North Dakota, Grand Forks, ND 58202; Telephone (701) 777-2784.

The Master of Arts in Theatre Arts offers specializations in acting, directing, design and technical theatre, literature, or history.

The Master of Fine Arts degree offers specializations in ceramics, drawing, metalsmithing, painting, printmaking, sculpture, and mixed media.

The Master of Arts in Communication is offered through the School of Communication.
The School of
LAW

W. Jeremy Davis, 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 1996-97 entering class had an average undergraduate Grade Point Average (GPA) of 3.10 and an average LSAT score of 152.

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, if the applicants’ file is completed before deadline, it will be sent to the Admission Committee for consideration.

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

Students registered in other colleges or schools of the University of North Dakota who desire to enroll in one or more courses in the School of Law may do so, on a limited basis, provided they obtain the permission of the Dean of the School of Law and the instructor of the particular course. No credit in the School of Law will be given for these classes, however.

LIBRARY

The Thormodsgard Law Library of the School of Law has more than 230,000 volumes, 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

HISTORY AND MISSION
The School of Medicine and Health Sciences is composed of a number of different 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 and the nation, and to advance medical and biomedical knowledge through research. These components include:
1. A state-wide, four-year curriculum for medical students leading to the award of the M.D. degree;
2. A set of physician postgraduate medical education programs of 3-4 years in duration (residencies) leading to certification in Family Medicine, Internal Medicine, Surgery and Psychiatry, together with a one-year program that addresses several medical specialties;
3. A Continuing Medical Education program to address the career-long need for physicians and other health care personnel to continue learning;
4. Graduate programs in the Bio-medical sciences leading to Ph.D. degree, M.S. degree, and M.D./Ph.D. degree in Anatomy and Cell Biology, Biochemistry and Molecular Biology, Microbiology and Immunology, Pharmacology and Toxicology, and Physiology;
5. A set of postdoctoral research training programs in the disciplines noted above;
6. Graduate programs leading to M.S. degrees in Physical Therapy and Clinical Laboratory Science;
7. Undergraduate Programs leading to B.S. degrees in Athletic Training, Cytotechnology, Clinical Laboratory Science, and Occupational Therapy;
8. Undergraduate and graduate course work in Anatomy and Cell Biology, Biochemistry and Molecular Biology, Microbiology and Immunology, Pharmacology and Toxicology, and Physiology available to students at UND;
9. A Physician Assistant Program leading to certification after one year for Registered Nurses who have at least four years practice experience.

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 then transferred to other medical schools for the last two years of medical education and for receipt of the M.D. 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, legislative action approved a four-year curriculum and authorized the granting of the Doctor of Medicine degree. This was accomplished in stages using a 2:1:1 plan where students transferred to other medical schools for their third year and returned to UND to complete their final year and to receive 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, vision, eating disorders and neuroscience.
The Physicians Assistant Program was established in 1970 and is administered under the Department of Community Medicine and Rural Health through the 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 has since changed its name to 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 B.S. degree in Athletic Training was approved in September, 1990, by the North Dakota Board of Higher Education and is administered under the Department of Family Medicine through the Division of Sports Medicine.

SUGGESTED UNDERGRADUATE COURSES FOR STUDENTS PLANNING TO STUDY MEDICINE
Four years of college preparation are recommended for students wishing to enter 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>Course</th>
<th>Minimum Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry</td>
<td>8</td>
</tr>
<tr>
<td>Inorganic and Quantitative</td>
<td>8</td>
</tr>
<tr>
<td>Organic</td>
<td>8</td>
</tr>
<tr>
<td>Biology</td>
<td>8</td>
</tr>
<tr>
<td>Physics</td>
<td>8</td>
</tr>
<tr>
<td>Psychology/Sociology</td>
<td>3</td>
</tr>
<tr>
<td>Language Arts (English, Speech</td>
<td>6</td>
</tr>
<tr>
<td>College Algebra</td>
<td>3</td>
</tr>
</tbody>
</table>

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 is also highly recommended. Students are urged to see their advisers regularly.

Application for admission to the School of Medicine and Health Sciences must be received no later than Nov. 1 of the year preceding desired admission.

UNDERGRADUATE PROGRAMS
The following four undergraduate degree programs in health sciences are administered by the School of Medicine and Health Sciences. See also the departmental listings which begin on page 58.
Athletic Training

Students can pursue a Bachelor of Science degree in Athletic Training under the direction of 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 CAAHEP. 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)

A four-year academic program leading to the degree of Bachelor of Science in Clinical Laboratory Science (formerly medical technology) was first instituted in 1949. The degree includes two years of pre-clinical laboratory science education followed by two years of professional course work. 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 (NAACLS). Graduates of the program will be eligible to sit for several national certification examinations. In addition to certification, some states have specific requirements for licensure of clinical laboratory personnel which vary from state to state.

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 Jan. 1 for the senior year program beginning the following Fall semester.

Occupational Therapy

The occupational therapy program is accredited by the Accreditation Council for Occupational Therapy Education. Graduates of this four and one-half year program will receive a Bachelor of Science in Occupational Therapy degree and will be able to sit for the national certification examination for the occupational therapist administered by the National Board for Certification in Occupational Therapy, Inc. The student spends the first two years as a pre-major in the School of Medicine and Health Sciences. Students are eligible to apply for admission to the professional occupational therapy program in the spring of their sophomore year when they are completing the required pre-professional course work. A satellite professional level occupational therapy program is available for Wyoming residents at Casper College, Casper, WY. Tuition and other information regarding the program are available by contacting the Occupational Therapy Department at Casper College (Telephone: 307-268-2541). Wyoming residents may call 888-699-0006.

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 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 teleconferencing. 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.

Physical Therapy

The physical therapy curriculum is accredited by the American Physical Therapy Association. The five-and-one-half year program leads to the degree of Master of Physical Therapy, a rural-oriented first professional degree.

Applications for admission to the professional program may be obtained from the Department of Physical Therapy after Jan. 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 Physician Assistant Program is administered by the Department of Community Medicine and Rural Health through its Division of Health Practitioners. This 12-month, competency-based certificate program is accredited by the American Medical Association’s Committee on Allied Health Education and Accreditation (CAHEA). Enrollment is limited to licensed registered nurses with a minimum of three years professional nursing experience and sponsorship by a practicing primary care physician. For more information contact the Department of Community Medicine and Rural Health at (701) 777-2344.

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 provides 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), and 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 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 level. The program is committed to preparing professionals in all related health care fields. Each year the School of Medicine 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 a Family Practice Center, 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 recently completed the initial phase of a building program to house the biomedical sciences, 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 the programs in health sciences. In the future, a modern animal facility is planned as well as space for the Occupational Therapy program.

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 “coordinated, 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
Elizabeth G. Nichols, Dean

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 dietetics and nutrition joined the College. The College of Nursing now offers professional programs in nursing and nutrition and dietetics. Undergraduate degrees are offered in nursing (R.N.), community nutrition, and dietetics (R.D.). Graduate specialties within the masters program include: adult health, parent child, rural health, anesthesia nursing, and family nurse practitioner preparation.

The baccalaureate program in nursing provides students a sound background of 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 (NCLEX-RN).

The college promotes improvement of nursing and health care through teaching, scholarship, research, and service in nursing and health care. Within a comprehensive university environment, the College provides education for beginning professional nursing practice at the baccalaureate level and for advanced nursing practice at the master’s degree level. The College is committed to fostering critical thinking and intellectual inquiry in a caring environment which assumes a positive regard for others and which 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 which is essential to meeting the needs of society in a constantly changing environment. Education in nursing at the baccalaureate level prepares nurse generalists for the provision of comprehensive nursing and health care characterized by a holistic, caring, collaborative, professional approach. Education in nursing at the master’s degree level builds upon the baccalaureate and prepares advanced nurse clinicians in specialized areas of nursing for leadership roles in nursing practice, education, and administration. As the only state assisted institution in North Dakota authorized to offer graduate education in nursing, the College has a distinctive responsibility to provide distance learning opportunities for access to the master’s degree program.

The College of Nursing strives to reflect current trends in the nursing profession, there may be on-going changes in the curriculum.

Admission to the 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 Program, the student must have: completed 24 semester hours of credit, including general chemistry, organic 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 previously qualified for admission within the last two years. College Level Examination Program (CLEP) subject exam results will be accepted according to the current University policy.

The Nursing program admits students once a year 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 April 1 for Fall 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 Affairs or your advisor for the specifics of the selection process and procedures.

Students may petition to establish credit through special examinations according to University policy (see page 31). 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 Program. All qualified students are considered on merit.

Transfer students who plan to enter the Nursing Program must fulfill the same minimum prerequisite requirements as students seeking admission from other units of the University of North Dakota. 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 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) along with other regional institutions.

ACREDITATION
The graduate and undergraduate nursing programs are approved by the State Board of Nursing and accredited by the National League for Nursing.

The Coordinated Program in Dietetics is accredited by the Commission on Accreditation/Approval for Dietetics Education of the American Dietetic Association.

NURSING PROGRAM

Admission to Nursing

Students who wish to pursue a degree in Nursing 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 Nursing major are advised to follow the suggested curriculum leading to the Bachelor of Science in Nursing (see page 127). Since the College of Nursing strives to reflect current trends in the nursing profession, there may be on-going changes in the curriculum.

Admission to the 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 Program, the student must have: completed 24 semester hours of credit, including general chemistry, organic 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 previously qualified for admission within the last two years. College Level Examination Program (CLEP) subject exam results will be accepted according to the current University policy.

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The University of North Dakota College of Nursing is a member of the Agassiz Region Nursing Education Consortium (ARNEC) along with other regional institutions.
DEGREE REQUIREMENTS FOR GRADUATION

All candidates for the degree, Bachelor of Science in Nursing, must fulfill the following requirements:

1. Completion of all University graduation requirements, including residence, as well as the required courses in the College of Nursing. See pages 27-30, 128.

2. A minimum of 129 semester hours.

3. A minimum grade point average of 2.50 overall.

PROGRESSION REQUIREMENTS

1. A 2.50 overall is required each semester for progression to the next semester of sophomore, junior, or senior nursing courses.

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. 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;
   b. negative annual tuberculin skin tests or, if positive, a negative chest x-ray; and
   c. current medical/hospitalization insurance or certify assumption of full responsibility for health costs incurred.
   d. a hepatitis B vaccine series.
   e. proof of immunity to measles (Rubeola)
   f. documentation of attendance at OSHA Inservice.

4. A student repeating a ‘D’ or an ‘F’ in a clinical nursing course may repeat it only once.

5. A student may not repeat more than two clinical nursing courses.

Students who do not meet these 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 Student handbook.

Students should note that nursing courses are sequenced to build on one another over six semesters. Careful attention should be paid to pre- and co-requisites. Each semester is to be completed in its entirety before progressing to the next semester.

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, etc., 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 should note that the clinical affiliation for mental health nursing is with the Statewide Psychiatric Nursing Education Program in Jamestown. Students may also complete the practicum course at a distant site. There are travel and housing costs associated with these affiliations.

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.

AWARDS

Each year Nursing majors may apply for College of Nursing Memorial awards. Awards and criteria are listed in the College of Nursing Student Handbook. Selection is based on a variety of factors, including GPA, financial aid, interest, and nursing ability. Additional information is available in the College.

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/working experience is individualized according to the student’s prior academic and work experiences and the needs of the employing agencies.

STUDENT ORGANIZATIONS

Student Societies: NSA is the nursing student’s pre-professional organization. UND-NSA is affiliated with the North Dakota Student Nurses Association and the National NSA.

Student Council: The College of Nursing supports a student council that represents the students within the university student organization.

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 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

Admission to the Department of Nutrition and Dietetics may occur at the time a student is admitted 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 page 129). 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 Dietetics occurs annually in the spring semester for admission in the following fall semester. The application deadline is the last class day on the academic calendar prior to the break for spring semester recess. To be considered a candidate for admission, the student must have already completed, be currently enrolled in or plan completion through summer school enrollment of all preprofessional courses (see page 129). Criteria for admission include a grade of ‘C’ or better in all nutrition, food and science courses with a minimum GPA of 2.6 and a demonstrated interest in the field of dietetics.

To be eligible for consideration, the student must submit the application form with a letter stating professional goals and describing personal qualities which would assist in attaining these goals, request references from two individuals and complete a personal interview with each selection committee member. After all applicants have completed the steps in the admission procedure, the selection committee determines the members of the class entering in the fall. The number of students admitted is determined by the availability of faculty and clinical facilities.
Admission of transfer students to the Coordinated Program in Dietetics. Transfer students seeking admission to the professional phase of Dietetics must fulfill the same prerequisite requirements as students currently enrolled in Pre-Dietetics at the University of North Dakota. Students planning to transfer from another accredited institution to UND are advised to contact the Department of Nutrition and Dietetics to verify equivalency of courses on other campuses with those offered at UND prior to applying for admission. All qualified students, whether currently enrolled at or planning to transfer to UND, are considered on merit.

Progression Requirements. Students in 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 reacceptance application. Reacceptance into the program will be on the basis of space available.

Additional expenses. The professional phase of the program has additional expenses due to clinical/community experiences, travel and professional activities. Additionally, the schedule of classes and supervised practice experiences must have precedency 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 (see page 129). Graduates completing Option A are eligible to become Licensed Nutritionists (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 advisor in the Department of Nutrition and Dietetics.

Awards

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 department office.

College of Nursing Student Council. The College of Nursing supports a student council that represents the students within the university student organization, 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 eight colleges and schools which offer undergraduate degrees. These include the Center for Aerospace Sciences, College of Arts and Sciences, the College of Education and Human Development, the School of Engineering and Mines, the College of Fine Arts and Communication, the School of Medicine, and the College of Nursing.

Some undecided students may return to the Office of Student Academic Services after being enrolled in a degree granting college to re-explore their academic and career interests.

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 advisor. All students who have not decided on a major should meet with their advisor on a regular basis and should consult with their advisor 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 a four-year, degree-granting college. To advance 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.

Many new students devote much of their first year of coursework to satisfying the University's general education requirements, which must be completed by all undergraduate students no matter which school or college they eventually enter to become degree candidates. The general education requirements form a core of learning that the University sees as necessary for a complete liberal education. These requirements include a minimum of nine credit hours in communications; twelve hours in mathematics, science and technology; nine hours in social sciences and nine hours in arts and humanities. See pages 27-30 for more information. Within each of these broad areas, students may select from a wide variety of courses. Many students who have not decided on a major find that their general education studies point out possible majors for them.

Students who have chosen a major field of concentration are advised to select courses from among those offered in the general education requirement areas that are especially recommended for the curriculum they expect to follow. Many of these recommendations are found in the departmental and program area listings which begin on page 58.

D. J. ROBERTSON AWARD

The D. J. Robertson Academic Award is presented each spring and fall by the Office of Student Academic Services in recognition of academic excellence by freshman students. These students must achieve a 4.0 grade point average and have completed a minimum of 12 semester hours of traditionally graded course work.

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, theaters, 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. Some courses meet for twelve weeks while others meet for six weeks. In some instances courses may be taught in sequence. For instance, Spanish 101 may be offered during the first four weeks and Spanish 102 may be offered during the second four weeks of the twelve-week Summer Session.

Along with the twelve- and six-week courses, some courses will be one, two, four, and eight weeks in length. 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

The Summer Session is administered by the Dean of Outreach Programs. 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, or contact the Summer Session Office, University of North Dakota, P.O. Box 9021, Grand Forks, ND 58202-9021.
Undergraduate Departmental Courses, Programs

This section of the catalog includes, in alphabetical order, department and program area requirements and course descriptions. University graduation requirements are found on pages 27-31, and the requirements of the degree-granting colleges and schools are found beginning page 35.

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 achieved 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

(H. Wilde (Chair), Beard, Carlson, Ellingson, Hansen, Harmeson, Hiltnor, Loyland, Medalen, Ness, Wacker and Wambsganss)

College of Business and Public Administration

The Department of Accounting and Business Law has prepared individuals for careers in commerce, including professional accounting, since 1927. Department faculty were instrumental in establishing the North Dakota Society of Certified Public Accountants in the late 1930s or early 1940s (an exact date is not known), and the Department has a long-standing tradition of interaction with a broad range of accounting professionals.

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 Department provide the range of experience and knowledge needed for success as a professional accountant. The Department’s programs also fulfill general University and College of Business graduation requirements.

Mission

The primary mission of the Department of Accounting and Business Law is to prepare students for careers in accounting and business in the north-central region of the United States. In achieving this mission, the Department places highest emphasis on teaching and learning. The Department also recognizes the importance of scholarly activities and service.

Programs

The Department offers two programs—the Bachelor of Accountancy (B.Acc.) and the Bachelor of Business Administration with a major in Accounting (B.B.A.). The B.Acc. program is designed for students interested in becoming Certified Public Accountants (CPA) or Certified Management Accountants (CMA). The CPA and CMA are national designations that, at the minimum, require passage of a qualifying examination. Requirements to sit for the CPA examination are established by the Institute of Management Accountants, a private nongovernmental organization. In contrast, the requirements to sit for the CMA examination are governed by individual states (more about the CPA examination below). The B.Acc. is designed to meet the educational requirements of these examinations. As a result, the B.Acc. program is very structured, with few electives in accounting and business.

The B.B.A. provides some flexibility for students to tailor their programs of study. As such, it is designed primarily for individuals seeking to add a minor or a double major to their accounting program. Individuals interested in pursuing less specialized careers may also choose the B.B.A. as there are several elective hours available.

BACHELOR OF ACCOUNTANCY

Required 125 hours including:

I. General Education Requirements, see pages 27-30.

II. College of Business and Public Administration Requirements, see page 39 and including:

| Acct 200, 201 | Elements of Accounting I & II | (6) |
| Acct 315 | Business in the Legal Environment | (3) |
| BVED 217 | Fundamentals of Management Information Systems | (4) |
| 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) |
| Math 104 | Finite Mathematics | (3) |
| Math 204 | Survey of Calculus | (3) |
| Mgmt 300 | Principles of Management | (3) |
| Mgmt 301 | Production Management | (3) |
| Fin 310 | Principles of Financial Management | (2) |
| Fin 318L | Problems in Financial Management | (1) |
| Mgmt 475 | Strategic Management | (3) |
| Mkt 301 | Principles of Marketing | (3) |
| Plsc 101 | American Government I | (3) |
| Comm 161 | Fundamentals of Public Speaking | (3) |

One course selected from the following:

| Psy 101 | Introduction to Psychology | (3) |
| Soc 101 | Introduction to Sociology | (3) |
| Anth 171 | Introduction to Cultural Anthropology | (3) |

III. The following Major Requirements:

| Acct 218 | Computer Applications in Business | (2) |
| Acct 301, 302 | Intermediate Accounting I & II | (8) |
| Acct 305 | Cost Accounting I | (3) |
The B.Acc. program meets the current and year 2000 requirements for accounting, business law and business courses. With careful planning and course selection, the current B.B.A. may also be structured to meet both current and year 2000 requirements. Please note that neither program meets the 150 hour requirement. Students interested in becoming CPAs should be prepared to either extend their undergraduate program by an additional 25 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).

As a result of the changing law, both programs of study should only be considered as minimums necessary for current testing. The faculty strongly advises student planning to sit for the examination before 2000 to add six to nine hours of additional accounting electives to ensure adequate preparation.

**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 295. Special emphasis on partnership, corporate accounting, and the uses of accounting information by managers. F,S

### 205. Managerial Accounting
2 credits. Prerequisite: Acct 201 or Acct 295. The application of accounting concepts and techniques to managerial problems of planning, control and decision making. For non-accounting majors only. F,S

### 218. Computer Applications in Business
2 credits. Prerequisite: BVED 217. Study of the use of computer applications in business. F,S

### 295. Survey of Accounting Principles
3 credits. No credit allowed to students who have completed Acct 201. Fundamentals of the financial accounting system, managerial accounting content, generally accepted accounting principles, financial statement analysis and the analysis and interpretation of financial information. 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

### 302. Intermediate Accounting II
4 credits. Prerequisites: Acct 301. Corporations, long-term liabilities, investments, statement analysis, and cash flow statement. F,S

### 303. Cost Accounting
3 credits. Prerequisite: Acct 201 and 218. The introduction of modern cost accounting with insight and breadth regarding both the accountant’s and manager’s role in an organization. F,S

### 306. Cost Accounting II
3 credits. Prerequisite: Acct 305, Econ 210. Analytical applications of accounting information for product costing, financial reporting, decision making, and organizational planning and control. 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

### 337. Cooperative Education
1 to 8 credits; may be repeated to a total of 12 credits. Prerequisites: Acct 301, 305; minimum 2.7 GPA overall; approval of the Director of Accounting Cooperative Education. On the job compensated work experience in various areas of Accounting. S-U grading not allowed. F,S

### 401. Advanced Accounting
3 credits. Prerequisite: Acct 302. Special problems in accounting including consolidated statements, partnerships, and foreign exchange. F

### 403. Contemporary Accounting Theory
3 credits. Prerequisites-Corequisites: Acct 401 or consent of instructor. A study of the emerging issues and 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. Auditing
3 credits. Prerequisites: Acct 302, 309, Econ 210. Procedures, duties, responsibilities and ethics of an auditor; problems that arise in the course of an audit. F,S

### 406. Auditing Problems
3 credits. Prerequisite: Acct 405 or consent of instructor. The application of auditing theory to practical problems. F,S

### 410. Federal Individual Income Tax
3 credits. Prerequisite: Acct 302. Federal individual income tax relating to individuals to include the more complex tax situations. A computerized individual income tax preparation is used as part of the course. F,S

### 411. 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

### 412. Advanced Tax
3 credits. Prerequisites: consent of instructor. Unified transfer tax, trusts and estates, other contemporary topics as appropriate, and techniques of tax research. F

### 490. The Literature of Accounting
1 to 4 credits. Prerequisites: Acct 302, 306 and consent of instructor. Directed studies in the recognized journals, periodicals, and professional publications of the field.

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**B.B.A. WITH MAJOR IN ACCOUNTING**

Required 125 hours including:

I. General Education Requirements. see pages 27-30.

II. College of Business and Public Administration Requirements. see page 39 and including:

- Acct 200, 201. Elements of Accounting I & II. (6)
- BVED 217. Fundamentals of Management Information Systems. (3)
- Econ 201. Principles of Microeconomics. (3)
- Econ 202. Principles of Macroeconomics. (3)
- Econ 303. Money and Banking. (3)
- Math 104. Finite Mathematics. (3)
- Math 204. Survey of Calculus. (3)
- MGMT 100. Principles of Management. (3)
- MGMT 301. Production Management. (3)
- FIN 310. Principles of Financial Management. (2)
- FIN 310P. Problems in Financial Management. (1)
- MGMT 475. Strategic Management. (3)
- MKT 301. Principles of Marketing. (3)
- PSYC 101. American Government I. (3)
- COMM 161. Fundamentals of Public Speaking. (3)

One course selected from the following:

- PSY 101. Introduction to Psychology. (3)
- SOC 101. Introduction to Sociology. (3)
- Anth 171. Introduction to Cultural Anthropology. (3)

III. The following Major Requirements:

- Acct 218. Computer Applications in Business. (2)
- Acct 301, 302. Intermediate Accounting I & II. (8)
- Acct 305. Cost Accounting I. (3)
- Acct 309. Accounting Information Systems. (3)
- Acct 405. Auditing. (3)
- Acct 411. Business Income Taxation. (3)

At least three courses selected from the following:

- Acct 306. Cost Accounting II. (3)
- Acct 312. Fund Accounting. (3)
- Acct 316. Business Law. (3)
- Acct 401. Advanced Accounting. (3)
- Acct 403. Contemporary Accounting Theory. (3)
- Acct 406. Auditing Problems. (3)
- Acct 410. Federal Individual Income Tax. (3)
- Acct 412. Advanced Tax. (3)
- Acct 416. Advanced Business Law. (3)
- BVED 320. Business Communications. (3)

Upper division courses in Mgmt, Mktg, Econ, Fin, Bus, Math, and consent of instructor. Directed studies in the recognized journals, periodicals, and professional publications of the field.

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IV. Students must complete at least 90 semester hours of non-accounting courses. Accounting 218 and business law courses are not considered accounting courses for this requirement.

**THE CERTIFIED PUBLIC ACCOUNTANT EXAMINATION**

According to North Dakota law and State Board of Accountancy regulations, students are currently eligible to sit for the Uniform Certified Public Accountant Examination with a bachelor’s degree that includes at least 30 hours of accounting and business law. After December 31, 1999, “year 2000,” individuals need a degree and at least 150 total semester hours to be eligible for this examination. As of this writing, those 150 hours must include at least 24 hours of accounting and 24 hours of other business courses.
Anatomy and Cell Biology
(Anat)
E. Carlson (Chair), Hunt, Keck, McCormack, Oberpriller, Olson, Rada, Rieke, Ruit, Symser, and Thompson

Courses

204. Anatomy for Paramedical Personnel. 3 credits. This series of three lectures per week presents a systematic study of the human body. F,S

204L. Anatomy for Paramedical Personnel. 2 credits. A basic laboratory to complement Anatomy 204. Prerequisite or Co-requisite: Anat 204. F,S

490. Directed Studies in Anatomy. 1-3 credits (repeatable to a maximum of 6 credits). Supervised studies and/or laboratory experiences in morphology for one or more students. F,S,S

498. Internship in Anatomy. 1-15 credits (repeatable to a maximum of 15 credits). Prerequisite: Junior or Senior status and instructor consent. This course will provide in-depth study and/or laboratory experiences in morphology in fields of faculty specialization. F,S,S

Anthropology
(Anth)
F. Schneider (Chair), Lang, Leach and Williams

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 major 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 hours including:
I. General Education Requirements, see pages 27-30.
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 Seminar .........................................................................................(3)

Method and Theory ...........................................................................................................(9)

Anth 371 ...........................................Cultural Dynamics .........................................................(3)

Anth 372 ...........................................Culture Theory .................................................................(3)

Anth 350 ...........................................Ethnographic Methods ...............................................(3)

Anth 300 ...........................................Archaeological Laboratory Methods ......................(3)

Anth 380 ...........................................Field Techniques in Archaeology .............................(3)

Anth 388 ...........................................Method and Theory in Archaeology ....................(3)

Electives .........................................................................................................................(15)

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 hours, 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 .....................................................................................................................(3)

Anth 300 ...........................................Archaeological Laboratory Methods ......................(3)

Anth 350 ...........................................Ethnographic Methods ........................................(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)

Electives in Anthropology ................................................................................................(3)

Courses

100. Introduction to Anthropology. 3 credits. An introduction to physical and cultural anthropology with an overview of human evolution and human culture. F,S

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. The nature and development of culture, utilizing illustrative data drawn from literate and nonliterate peoples of the world. 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

209. Special Topics. 1-4 credits. F,S

220. Native American Technology. 1-4 credits. Prerequisites: Anth 170, 171, or 172. An introduction to the techniques and methods employed by Native Americans to construct tools and artifacts. Includes experimental replication. F

300. Archaeological Laboratory Methods. 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. On demand.

309. Special Topics. 1-4 credits. F,S

325. Human Origins. 3 credits. Prerequisites: 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 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 in an anthropological perspective. F

345. Forensic Science. 3 credits. An exposure to the basic methods and theoretical bases of the various forensic sciences. A major emphasis is placed on forensic anthropology and the recovery and identification of human skeletal remains. S

350. Ethnographic Methods. 3 credits. Prerequisite: Anth 171 or by special permission. Introduction to fieldwork methods and analytic approaches used by cultural anthropologists in their ethnographic research; class discussion topics will include ethical issues, framing of research problems, the writing of ethnographic accounts, and modes of presentation of research results. Once every third semester.

370. 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 analytic, interaction of language with other cultural subsystems. S

371. Cultural Dynamics. 3 credits. Prerequisite: Anth 171. An examination of the problems, theories and consequences of cultural change. 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 origins and development of human culture in Africa, Asia, and Europe from the lower stone age to the beginning of farming communities. Major archaeological sites will be critically examined and an interdisciplinary approach will be stressed. P/F

375. 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

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. North American Archaeology. 3 credits. Prerequisites: Anth 172 or consent of instructor. Explores the fascinating cultural developments that have taken place throughout prehistory in North America (north of Mexico), ranging from the first peopling of the Americas to the emergence of complex chiefdoms, and from hunting and gathering to the development of intensive agriculture. 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. S

379. Culture Area Studies. 3 credits. May be repeated to maximum of 6 credits. Prerequisites: Anth 170 or 171 or consent of instructor. 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. SS

381. Method and Theory in Archaeology. 3 credits. Prerequisites: Anth 172 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 cultural change. Techniques, methods, and theoretical frameworks used in modern prehistoric archaeology are examined. Readings in the professional literature, case studies, and guest lectures provide vivid examples of archaeologists in action and theory. S

426. Lithic Technology. 3 credits. Prerequisites: Anth 172 or consent of instructor. Study of the techniques and methods of manufacturing chipped stone tools and artificats and the basis for analyzing such materials in the archaeological record. S

440. Human Osteology. 3 credits. Prerequisites: Anth 170 or consent of instructor. The description of the human skeleton with emphasis on prehistoric skeletal analysis. S

465. Culture, Illness and Health. 3 credits. Prerequisites: Anth 171 or consent of instructor. Examination of culturally based beliefs and practices involved in maintenance of health and the handling of illness in non-Western and modern societies. S

478. Studies in Anthropology. 1-4 credits. Prerequisites: Anth 170, 171, or 172 or consent of instructor. Study topics vary with interests of staff and students; projected topics include: technology and culture, Central Asian economy, ecology and social organization. F/S

480. Senior Seminar. 3 credits. Prerequisite: Senior major. The seminar will examine a current debate or an area of study involving two or more subfields of anthropology. The seminar will provide an opportunity for students to integrate knowledge and skills obtained in anthropology. S

490. Independent Studies. 1-4 credits. Consent of instructor. Independent research conducted under advisement with department faculty. Research is student originated and developed. F/S

497. Readings in Anthropology. 1-5 credits. Prerequisites: Anth 170, 171, or 172 and consent of instructor. Designed for students who want instruction in subjects not covered adequately in usual course offerings. Special arrangements must be made with an instructor prior to registration. F/S

on the central issues and questions posed by the new scholarship on women, and introduce students to the perspectives and methodologies of a variety of disciplines. F

250. Arts and Sciences. 1-4 credits in any one course; note credit limitations mentioned above. Specially arranged seminars or courses on a variety of subjects not covered by regular departmental offerings. May be initiated by students with approval of dean and departments involved. Provided appropriate faculty members are willing.

290. Arts and Sciences. 1-4 credits in any one semester; note credit limitations mentioned above. Specially arranged tutorials or reading programs on a variety of subjects not covered by regular departmental offerings. May be initiated by students with approval of dean and departments involved. Provided appropriate faculty members are willing.

351. Introduction to Law and Legal Studies. 3 credits. Segments on Contracts, Criminal Law, Constitutional Law, and Torts; taught in customary law school manner to acquaint undergraduates and others interested in exploring a career in the legal profession with law school methodology and legal analysis.

480. Feminist Theory. 3 credits. Feminist theory examines the foundations of American feminism from enlightenment liberal to postmodern and standpoint theories. The course first develops then critiques these fundamental approaches. Opportunities are provided to integrate mainstream and marginal experiences of feminist theory and its practice. S

Atmospheric Sciences

AtSc)

J. Stith (Chair), Grainger, Osborne, Poellot, and Rinehart

The Department of Atmospheric Sciences offers a comprehensive education in the Atmospheric Sciences leading to the degree of Bachelor of Science in Atmospheric Sciences. The degree is awarded in the Center for Aerospace Sciences. A minimum of a 2.50 GPA is required for admittance into the program and for graduation.

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 atmospheric chemistry, air pollution, radar meteorology, agricultural meteorology, cloud physics, aviation meteorology and weather modification.

Center for Aerospace Sciences

B.S. IN ATMOSPHERIC SCIENCES

Requires 125 hours including:

1. General Education Requirements, see pages 27-30. I

2. Center for Aerospace Sciences requirements, see page 35. II

3. The Following curriculum:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
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<tbody>
<tr>
<td>Engl 101, 209</td>
<td>Composition I, Technical &amp; Bus. Writing</td>
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<tr>
<td>Math 211, 212</td>
<td>Calculus I, II</td>
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<td>Phys 205</td>
<td>General Physics</td>
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<td>AtSc 110</td>
<td>Meteorology I</td>
<td>(4)</td>
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<tr>
<td>Social Science</td>
<td>Arts and Humanities</td>
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<tr>
<td>Free Electives</td>
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<thead>
<tr>
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<tr>
<td>Math 213</td>
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<tr>
<td>Phys 206</td>
<td>General Physics</td>
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<tr>
<td>Chem 105</td>
<td>General Chemistry</td>
<td>(4)</td>
</tr>
<tr>
<td>AtSc 320</td>
<td>Synoptic Meteorology I</td>
<td>(4)</td>
</tr>
<tr>
<td>AtSc 240</td>
<td>Meteorological Instrumentation</td>
<td>(4)</td>
</tr>
<tr>
<td>AtSc 353</td>
<td>Physical Meteorology</td>
<td>(3)</td>
</tr>
<tr>
<td>Communications</td>
<td>Free Electives</td>
<td>(3)</td>
</tr>
</tbody>
</table>

225. Introduction to the Study of Women. 4 credits. An introduction to the study of women as subjects of scholarly inquiry, with emphasis on assessments of women’s contributions to Western culture. The course will provide an interdisciplinary focus.
MINOR IN ATMOSPHERIC SCIENCES

Requires 20 hours including:

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AtSc 110</td>
<td>Meteorology I</td>
<td>4</td>
</tr>
<tr>
<td>AtSc 210</td>
<td>Meteorology II</td>
<td>4</td>
</tr>
<tr>
<td>AtSc 310</td>
<td>Weather Operations</td>
<td>3</td>
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</tbody>
</table>

All other Atmospheric Sciences courses will satisfy the minor excluding the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>AtSc 251</td>
<td>Advanced Weather Modification</td>
<td>3</td>
</tr>
<tr>
<td>AtSc 331</td>
<td>High Altitude Meteorology</td>
<td>4</td>
</tr>
<tr>
<td>AtSc 337</td>
<td>Cooperative Education</td>
<td>3</td>
</tr>
<tr>
<td>AtSc 498</td>
<td>Special Studies</td>
<td>3</td>
</tr>
<tr>
<td>AtSc 499</td>
<td>Internship</td>
<td>3</td>
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</table>

All Atmospheric Sciences electives (4) (3)

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. Prerequisite: AtSc 110. The analysis and portrayal of synoptic weather information. Kinematic flow analyses of barotropic and baroclinic systems. Introduction to many of the products produced by NWS. Includes laboratory. F.S.

231. Aviation Meteorology I. 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 clouds 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, societal, economical 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.

310. Weather Operations. 3 credits. Prerequisite: AtSc 210 or 320. An operations approach to application of principles of weather science and meteorological processes. Includes laboratory. F.S.

311. Aviation Meteorology II. 4 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, international weather, ground de-icing procedures and other topics. On demand.

337. Cooperative Education. 1-8 credits, may be repeated to a total of 12 credits with a maximum of 4 credits toward major electives. Prerequisites: AtSc 320, and all other GPA of at least 2.5, and approval of the Coordinator of Atmospheric Sciences coop- erative education. The student will receive credit for on-the-job compensated work expe- rience in various areas of meteorology available within the government, university or private sectors. SU grading only. F.S.SS

340. Introduction to Radar Meteorology. 4 credits. Prerequisite: Phys 206. Introduction to principles and theory of microwave radar and its uses as a meteorological observation or research tool. Includes laboratory. F.

350. Atmospheric Thermodynamics. 3 credits. Prerequisites: AtSc 110, Math 212, and Phys 205. An introduction into the theory and application of atmospheric thermodynamics used in synoptic, meso- and macroscale meteorology. The course covers the principles of classical thermodynamics and how they are applied to atmospheric processes. F.

353. Physical Meteorology. 3 credits. Prerequisites: AtSc 110 and Phys 206. A study of atmospheric processes and properties from a physical standpoint. Includes boundary layer and upper atmosphere processes, cloud microphysics and electrification, and atmospheric radiation. S.

360. Dynamic Meteorology. 4 credits. Prereqs: AtSc 320 and 350. Corequisite: Math 351. Basic equations of motion, atmospheric thermodynamics, balanced motions, and atmospheric disturbances are examined on an introductory level. S.

370. Computer Concepts in Meteorology. 3 credits. Prerequisites: AtSc 210 or 320 and an approved computer language course. Examines the need for 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. On demand.

420. Synoptic Meteorology II. 3 credits. Prerequisites: AtSc 360 and Math 352 or 353 as a pre- or corequisite. Application of quasi-geostrophic theory to the synoptic atmosphere including analysis and forecasting. Introduction to numerical weather prediction. F.

441. Radar Meteorology. 4 credits. Prerequisite: AtSc 340. Advanced radar theory, including basic radar principles, digital processing of radar signals, Doppler radar principles, displays and characteristic returns. Includes laboratory. S.

450. Introduction to Cloud Physics. 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.

470. Air Pollution Meteorology. 3 credits. Prerequisites: Chem 105 or 151, AtSc 350. Fundamentals of air pollution, the physical chemical processes which govern the life cycle of air pollutants and the regulatory environment. On demand.

490. Topics in Meteorology. 2-4 credits. Consent of instructor. This 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.

497. Senior Project. 2 credits. Senior status in meteorology, consent of advisor required. Original student investigation of field or laboratory problems, after conference with a supervising faculty member of the department. SU grading only. F.S.SS

498. Special Studies in Meteorology. 1-4 credits. Prerequisites: 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.SS

499. 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. F.S.SS

Aviation (Avit)

Lovelace (Chair), Bridewell, Cooke, DeRemer, Jackson, Jensen, Karim, Lindseth, Mead, Odegard, and Robertson

The Department of Aviation offers seven 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 Air Transport, Commercial Aviation, Air Traffic Control, Flight Education or Aviation Systems Management, and is granted by the Center for Aerospace Sciences.

A Rotorcraft-Helicopter option is available in Aviation degree programs. Students interested in this option must contact their advisors.

A Cooperative Education program is offered by the Department of Aviation, which encourages students to obtain on-the-job experience while continuing their academic education. Semester cooperative internships are available offering opportunities at major airports, general aviation manufacturers, airlines, and weather modification research operational contractors. Students can earn additional college credits through the cooperative internship program and at the same time obtain valuable on-the-job experience necessary to supplement their formal education.
Career services include the UND Career Planning and Placement Center, the Center for Aerospace Science’s Student Services Center, and an industry and alumni career database, which is maintained by CAS. In addition, representatives of aviation industries, the Federal Aviation Administration, Transport Canada and airlines come to UND for career fairs and interviewing sessions.

All students, regardless of major, are required to have a minimum Grade Point Average (GPA), cumulative and institutional, of 2.50 in order to enroll in all 200-level and above aviation courses. Students taking 100-level aviation courses must have a GPA, cumulative and institutional, of at least 2.00. All students who enroll in aviation courses who fall below the minimum GPA required are subject to withdrawal from the course by the Aviation Department.

AVIATION DEPARTMENTAL POLICIES

Flight costs are not included in 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. Students are encouraged to have a known source of income prior to enrolling in any flight training-related curriculum.

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 the Federal Aviation Administration Part 141, Appendix A—paragraph 2, and Appendix D—paragraph 2. Failure to meet these attendance requirements will disqualify the student for FAA pilot certification.

Students enrolled in flight courses are required to finish those flight lessons prescribed to each individual course during the semester enrolled. Failure to complete the lessons will result in an unsatisfactory grade.

TRANSFER OF PILOT RATINGS

Students who hold a Private Pilot certificate obtained without college credit are required to take Aviation 102, Introduction to Aviation, and complete the flight lessons contained in the Private Pilot Test Course. Students whose majors require only the Private Pilot certificate must also complete one flight course at UND beyond the private pilot test course. Students whose majors require additional flight courses must take the Private Pilot Test Course before taking Aviation 251, Aircraft Systems and Instruments.

Students who hold Commercial Pilot certificates and/or Instructo ratings obtained without college credit, and are majoring in a program that requires the commercial/instrument courses, are required to take Avii 251, 252, 353, 354, 355, AtSc 231, and complete the flight lessons contained in the Commercial Pilot Test Course. Students who hold a multi-engine rating obtained without college credit must also take the Multi-engine Test Course. In addition, students must complete one advanced flight course at UND. These courses are CFI Certification, CFI with Instrument rating, Multi-engine Certification, CFI with Multi-engine Certification, Citation type rating, ATP, and any helicopter flight course.

TRANSFER OF COLLEGE CREDIT/RATINGS

Aviation and related courses from other colleges and universities do not automatically transfer to UND. All Aviation transfer courses, 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.

Students with pilot certificates obtained with transfer college credit must demonstrate proficiency of each certificate and associated rating before the credits will be accepted to satisfy UND curriculum requirements. It is the student’s obligation to make arrangements for the appropriate proficiency flight check(s).

FLIGHT POLICIES

Regardless of academic major, once a student has enrolled at UND, all subsequent flight training must be completed in residence at UND. Flight training at other schools while enrolled at UND is not permitted. Enrolled students who receive flight training outside UND which is required under specific curriculum will not receive credit for the courses taken and will be dismissed from the program.

MEDICAL CERTIFICATES

A current medical certificate is required for all students planning to begin 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 III, Class II, and Class I. Students are advised to get a Class I certificate if they are planning to pursue a career in professional flight. Any physical limitations which may alter career plans will become evident at that time.

Students are encouraged to make plans to obtain their medical certificates long before they begin flight training. This will ensure that any problems can be addressed before the student enrolls in flight training.

DRUG POLICY

The Center for Aerospace Sciences has adopted a “no tolerance” policy regarding the use of drugs and alcohol, reflecting a commitment to the highest safety standards. In accord with this policy, all students beginning flight training at UND will be required to present negative drug test results, along with their medical certificate, before they will be permitted to enroll in flight courses. Random drug testing will continue throughout the year for all flight students.

FINANCIAL AID INFORMATION

Students are encouraged to explore all financial aid options as outlined on page 9. In addition to these forms of aid, the Aviation Department has a separate scholarship fund for its students. All aviation students, including freshmen and new transfers, are eligible to apply. Forms are available at the beginning of the fall semester from the Aviation Department. Applications for scholarships are due by mid-September; therefore, students are encouraged to pick up their applications as soon as they arrive in the fall.

Financial aid is available only for those flight courses required for a particular curriculum. If the student desires to obtain additional ratings, he/she is responsible for the expenses incurred.

PROGRAM DESCRIPTIONS

The Aviation Management curriculum is offered to those students whose career objectives are toward the management and operation of the airdside activities of the aviation industry. Emphasis is placed on the relationship of modern management practices to airline, airport and general aviation management. Requires a commercial pilot certificate with instrument and multi-engine ratings.

The Airport Management curriculum is offered to those students seeking employment in administrative positions with companies in and related to the groundside activities of the aviation industry. All aspects of general aviation, air carrier, and the total aviation industry will be studied in-depth with sufficient flexibility in courses to 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. Requires a private pilot certificate.

The Air Transport curriculum combines the Center’s SPEC-TRE® ab initio pilot training with the baccalaureate degree to give the student the best possible preparation for a career as an airline pilot. The Air Transport major is available in a corporate track or an airline track. Requires a commercial pilot certificate with instrument and multi-engine ratings. May require a type rating for internship.

The Commercial Aviation curriculum is designed for a variety of flight-related careers. Commercial Aviation combines a solid back-
ground in aviation courses with flight instructor ratings to give the student the education necessary for entry-level positions in the aviation industry. Requires a commercial pilot certificate with instrument and multi-engine ratings, plus a certified flight instructor certificate with instrument rating.

The Flight Education curriculum is designed for students interested in pursuing careers in teaching aviation. This program combines flight instructor ratings with vocational education courses to provide the student with a solid background in aviation education. Students interested in teaching at the college level are encouraged to go on to graduate work. Requires a commercial pilot certificate with instrument and multi-engine ratings, plus a certified flight instructor certificate with instrument and multi-engine ratings.

The Air Traffic Control curriculum is designed to place students directly into the exciting career field of air traffic control. This program also requires a second field of study. Requires a private pilot certificate.

The Aviation Systems Management curriculum is designed to be the latter 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 support services to complete a bachelor’s degree with an emphasis on management. Requires a private pilot certificate.

College of Business and Public Administration

B.B.A. WITH A MAJOR IN AIRPORT MANAGEMENT

Required: 125 hours, including:

II. College of Business and Public Administration Requirements, page 39.
III. The following curriculum:

PRE-BUSINESS CURRICULUM

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<tr>
<td>Acc 200</td>
<td>Elements of Accounting I</td>
<td>(3)</td>
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<tr>
<td>Acc 201</td>
<td>Elements of Accounting II</td>
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<td>AtSc 110</td>
<td>Meteorology I (Lab Science)</td>
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<tr>
<td>BVED 217</td>
<td>Fundamentals of Management Information Systems</td>
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<td>Comm 161</td>
<td>Fundamentals of Public Speaking</td>
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<td>CSci 110</td>
<td>Computer Programming I</td>
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<td>Principles of Microeconomics</td>
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<td>Lang 102</td>
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<td>Finite Mathematics</td>
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<td>Math 204</td>
<td>Survey of Calculus</td>
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<td>PSci 101</td>
<td>American Government I</td>
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<td>Psy 101</td>
<td>Introduction to Psychology</td>
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<td>Soc 101</td>
<td>Introduction to Sociology</td>
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AVIATION COURSES

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<td>Introduction to Aviation</td>
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<td>Avit 250</td>
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<td>Introduction to Air Traffic Control</td>
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<td>Avit 308</td>
<td>Aviation Safety</td>
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<td>Avit 402</td>
<td>Airport Planning and Administration</td>
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<td>Avit 403</td>
<td>Aerospace Law</td>
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<td>Avit 442</td>
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<td>Avit 407</td>
<td>General Aviation Operations and Management</td>
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ADVANCED BUSINESS COURSES

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<td>(3)</td>
</tr>
<tr>
<td>Econ 303</td>
<td>Money and Banking</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 341</td>
<td>Labor Economics and Labor Relations</td>
<td>(3)</td>
</tr>
<tr>
<td>Fin 310L</td>
<td>Principles of Finance</td>
<td>(2)</td>
</tr>
<tr>
<td>Fin 310L</td>
<td>Problems in Financial Management</td>
<td>(2)</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>
</tbody>
</table>

B.B.A. WITH A MAJOR IN AVIATION MANAGEMENT

Required: 125 hours, including:

II. College of Business and Public Administration Requirements, page 39.
III. The following curriculum:

PRE-BUSINESS CURRICULUM

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc 200</td>
<td>Elements of Accounting I</td>
<td>(3)</td>
</tr>
<tr>
<td>Acc 201</td>
<td>Elements of Accounting II</td>
<td>(3)</td>
</tr>
<tr>
<td>AtSc 110</td>
<td>Meteorology I (Lab Science)</td>
<td>(3)</td>
</tr>
<tr>
<td>BVED 217</td>
<td>Fundamentals of Management Information Systems</td>
<td>(4)</td>
</tr>
<tr>
<td>Comm 161</td>
<td>Fundamentals of Public Speaking</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci 110</td>
<td>Computer Programming I</td>
<td>(3)</td>
</tr>
<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>Intro to Business and Economic Statistics</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 101</td>
<td>Composition I</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 209</td>
<td>Technical and Business Writing</td>
<td>(3)</td>
</tr>
<tr>
<td>Lang 101</td>
<td>Foreign Language</td>
<td>(4)</td>
</tr>
<tr>
<td>Lang 102</td>
<td>Foreign Language</td>
<td>(4)</td>
</tr>
<tr>
<td>Math 104</td>
<td>Finite Mathematics</td>
<td>(3)</td>
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<tr>
<td>Math 204</td>
<td>Survey of Calculus</td>
<td>(3)</td>
</tr>
<tr>
<td>PSci 101</td>
<td>American Government I</td>
<td>(3)</td>
</tr>
<tr>
<td>Arts and Humanities (other than Language)</td>
<td>(1)</td>
<td></td>
</tr>
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</table>

One of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Anth 171</td>
<td>Cultural Anthropology</td>
<td>(3)</td>
</tr>
<tr>
<td>Psy 101</td>
<td>Introduction to Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 101</td>
<td>Introduction to Sociology</td>
<td>(3)</td>
</tr>
</tbody>
</table>

AVIATION COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avit 100</td>
<td>Aviation Orientation</td>
<td>(1)</td>
</tr>
<tr>
<td>Avit 102</td>
<td>Introduction to Aviation</td>
<td>(5)</td>
</tr>
<tr>
<td>Avit 250</td>
<td>Human Factors</td>
<td>(2)</td>
</tr>
<tr>
<td>Avit 302</td>
<td>Air Transportation</td>
<td>(3)</td>
</tr>
<tr>
<td>Avit 303</td>
<td>Introduction to Air Traffic Control</td>
<td>(2)</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>
<td>(3)</td>
</tr>
<tr>
<td>Avit 442</td>
<td>Airport Operations and Administration</td>
<td>(3)</td>
</tr>
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</table>

One of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avit 405</td>
<td>Airline Operations and Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Avit 407</td>
<td>General Aviation Operations and Management</td>
<td>(3)</td>
</tr>
</tbody>
</table>

ADVANCED BUSINESS COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Acc 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>
</tr>
<tr>
<td>Econ 341</td>
<td>Labor Economics and Labor Relations</td>
<td>(3)</td>
</tr>
<tr>
<td>Fin 310L</td>
<td>Principles of Finance</td>
<td>(2)</td>
</tr>
<tr>
<td>Fin 310L</td>
<td>Problems in Financial Management</td>
<td>(2)</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>
</tbody>
</table>

Center for Aerospace Sciences

B.S. IN AERONAUTICS WITH A MAJOR IN AIR TRANSPORT

NOTE: This program has a selective admission process. See your advisor for information.

Required: 125 hours, including:

II. Center for Aerospace Sciences Requirements, page 35.
III. The following curriculum:

GENERAL EDUCATION COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AtSc 110</td>
<td>Meteorology I</td>
<td>(4)</td>
</tr>
<tr>
<td>Comm 161</td>
<td>Fundamentals of Public Speaking</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci 110</td>
<td>Computer Programming I</td>
<td>(3)</td>
</tr>
</tbody>
</table>
AVIATION COURSES

Avit 100                     ...Aviation Orientation..........................(1)
Avit 102                     ...Introduction to Aviation..................(5)
Avit 104                     ...Aviation History..................................(3)
Avit 250                     ...Human Factors........................................(2)
Avit 251                     ...Aircraft Systems and Instruments.....(3)
Avit 252                     ...Basic Attitude Instrument Flying.......(3)
Avit 302                     ...Air Transportation..................................(3)
Avit 303                     ...Introduction to Air Traffic Control.....(2)
Avit 308                     ...Aviation Safety........................................(3)
Avit 309                     ...Flight Physiology......................................(3)
Avit 327                     ...Gas Turbine Engines...............................(3)
Avit 335                     ...Air Transport Regulations.....................(2)
Avit 353                     ...Aerodynamics—Airplanes........................(1)
Avit 354                     ...IFR Regulations and Procedures ..........(2)
Avit 355                     ...Multi-Engine Systems and Procedures......(2)
Avit 356                     ...Aircraft Law...............................................(3)
Avit 357                     ...International and Long-range Navigation.(3)
Avit 411                     ...Advanced Aerodynamics..........................(3)
Avit 421                     ...Advanced Flight Lab I............................(1)
Avit 422                     ...Advanced Flight Lab II..........................(1)
Avit 428                     ...Transport Category Aircraft Systems......(3)
Avit 430                     ...Aviation Resource Management................(2)
Avit 405                     ...Airline Operations and Management........(4)
Avit 429                     ...Turboprop Operations.............................(4)
Avit 407                     ...General Aviation Operations and Management.(3)
Avit 409                     ...Advanced Air Traffic Operations............(3)

OTHER REQUIREMENTS

Avit 210                     ...Aviation Meteorology I.............................(3)
Avit 310                     ...Aviation Meteorology II...........................(4)
BVEd 320                     ...Business Communication...........................(3)

*Plus electives total 125 credits.

B.S. IN AERONAUTICS WITH A MAJOR IN AIR TRAFFIC CONTROL

NOTE: This program has a selective admission process. See your advisor for information.

Required: 125 hours, including:

II. Center for Aerospace Sciences Requirements, page 35.
III. The following curriculum:

GENERAL EDUCATION COURSES

Avit 100                     ...Aviation Orientation..........................(1)
Avit 102                     ...Introduction to Aviation..................(5)
Avit 104                     ...Aviation History..................................(3)
Avit 250                     ...Human Factors........................................(2)
Avit 302                     ...Air Transportation..................................(3)
Avit 303                     ...Introduction to Air Traffic Control.....(2)
Avit 308                     ...Aviation Safety........................................(3)
Avit 360                     ...Air Traffic Control—Tower Operations I.(4)
Avit 361                     ...Air Traffic Control—Tower Operations II.(4)
Avit 362                     ...Air Traffic Control—Tower Operations III.(4)
Avit 402                     ...Airport Planning and Administration.....(3)
Avit 403                     ...Aerospace Law...............................................(3)
Avit 463                     ...Advanced Air Traffic Control—Radar Operations I.(4)
Avit 464                     ...Advanced Air Traffic Control—Radar Operations II.(4)

OTHER REQUIREMENTS

BVEd 320                     ...Business Communication...........................(3)
Comm 210                     ...Interpersonal Communication...................(3)
Mgmt 305                     ...Managerial Concepts................................(3)

*plus electives to total 125 credits*

*Students will be required to use their electives to establish some expertise in a second field. Normally that will mean taking a formal minor or second major. Suggested fields include Communication, Computer Science, Economics, Foreign Language, Industrial Technology, Meteorology, Office Administration, Political Science, Psychology and Public Administration.

B.S. IN AERONAUTICS WITH A MAJOR IN AVIATION SYSTEMS MANAGEMENT

Admission to this program requires the successful completion of an approved two-year program in aviation maintenance, avionics or electronics, dispatch, simulator repair or other aviation technical support program. Students in aviation maintenance are required to have the Airframe and Powerplant Mechanics license. Students in avionics/electronics are required to pass the FCC General Class Radio and Telephone license examination. Students in dispatch are required to possess an FAA Dispatcher’s rating.

Required: 125 hours, including:

II. Center for Aerospace Sciences Requirements, page 35.
III. The following curriculum:

Avit 100                     ...Aviation Orientation..........................(1)
Avit 102                     ...Introduction to Aviation..................(5)
Avit 302                     ...Air Transportation..................................(3)
Avit 308                     ...Aviation Safety........................................(3)
Avit 360                     ...Air Traffic Control—Tower Operations I.(4)
Avit 361                     ...Air Traffic Control—Tower Operations II.(4)
Avit 362                     ...Air Traffic Control—Tower Operations III.(4)
Avit 402                     ...Airport Planning and Administration.....(3)
Avit 403                     ...Aerospace Law...............................................(3)
Avit 405                     ...Advanced Air Traffic Operations............(3)
Avit 406                     ...Advanced Air Traffic Control—Radar Operations I.(4)
Avit 407                     ...Advanced Air Traffic Control—Radar Operations II.(4)

REQUIREMENTS

BVEd 320                     ...Business Communication...........................(3)
Comm 210                     ...Interpersonal Communication...................(3)
Mgmt 305                     ...Managerial Concepts................................(3)

*Required to total 125 credits*

*Students will be required to use their electives to establish some expertise in a second field. Normally that will mean taking a formal minor or second major. Suggested fields include Communication, Computer Science, Economics, Foreign Language, Industrial Technology, Meteorology, Office Administration, Political Science, Psychology and Public Administration.

B.S. IN AERONAUTICS WITH A MAJOR IN COMMERCIAL AVIATION

Required: 125 hours, including:

II. Center for Aerospace Sciences Requirements, page 35.
III. The following curriculum:

GENERAL EDUCATION COURSES

Avit 100                     ...Aviation Orientation..........................(1)
Avit 102                     ...Introduction to Aviation..................(5)
Avit 104                     ...Aviation History..................................(3)
Avit 250                     ...Human Factors........................................(2)
Avit 302                     ...Air Transportation..................................(3)
Avit 303                     ...Introduction to Air Traffic Control.....(2)
Avit 308                     ...Aviation Safety........................................(3)
Avit 360                     ...Air Traffic Control—Tower Operations I.(4)
Avit 361                     ...Air Traffic Control—Tower Operations II.(4)
Avit 362                     ...Air Traffic Control—Tower Operations III.(4)
Avit 402                     ...Airport Planning and Administration.....(3)
Avit 403                     ...Aerospace Law...............................................(3)
Avit 463                     ...Advanced Air Traffic Control—Radar Operations I.(4)
Avit 464                     ...Advanced Air Traffic Control—Radar Operations II.(4)

OTHER REQUIREMENTS

BVEd 320                     ...Business Communication...........................(3)
Comm 210                     ...Interpersonal Communication...................(3)
Mgmt 305                     ...Managerial Concepts................................(3)

*Required to total 125 credits*

*Students will be required to use their electives to establish some expertise in a second field. Normally that will mean taking a formal minor or second major. Suggested fields include Communication, Computer Science, Economics, Foreign Language, Industrial Technology, Meteorology, Office Administration, Political Science, Psychology and Public Administration.

B.S. IN AERONAUTICS WITH A MAJOR IN COMMERCIAL AVIATION

Required: 125 hours, including:

II. Center for Aerospace Sciences Requirements, page 35.
III. The following curriculum:

GENERAL EDUCATION COURSES

Avit 100                     ...Aviation Orientation..........................(1)
Avit 102                     ...Introduction to Aviation..................(5)
Avit 104                     ...Aviation History..................................(3)
Avit 250                     ...Human Factors........................................(2)
Avit 302                     ...Air Transportation..................................(3)
Avit 303                     ...Introduction to Air Traffic Control.....(2)
Avit 308                     ...Aviation Safety........................................(3)
Avit 360                     ...Air Traffic Control—Tower Operations I.(4)
Avit 361                     ...Air Traffic Control—Tower Operations II.(4)
Avit 362                     ...Air Traffic Control—Tower Operations III.(4)
Avit 402                     ...Airport Planning and Administration.....(3)
Avit 403                     ...Aerospace Law...............................................(3)
Avit 463                     ...Advanced Air Traffic Control—Radar Operations I.(4)
Avit 464                     ...Advanced Air Traffic Control—Radar Operations II.(4)

OTHER REQUIREMENTS

BVEd 320                     ...Business Communication...........................(3)
Comm 210                     ...Interpersonal Communication...................(3)
Mgmt 305                     ...Managerial Concepts................................(3)

*Required to total 125 credits*

*Students will be required to use their electives to establish some expertise in a second field. Normally that will mean taking a formal minor or second major. Suggested fields include Communication, Computer Science, Economics, Foreign Language, Industrial Technology, Meteorology, Office Administration, Political Science, Psychology and Public Administration.

B.S. IN AERONAUTICS WITH A MAJOR IN COMMERCIAL AVIATION

Required: 125 hours, including:

II. Center for Aerospace Sciences Requirements, page 35.
III. The following curriculum:

GENERAL EDUCATION COURSES

Avit 100                     ...Aviation Orientation..........................(1)
Avit 102                     ...Introduction to Aviation..................(5)
Avit 104                     ...Aviation History..................................(3)
Avit 250                     ...Human Factors........................................(2)
Avit 302                     ...Air Transportation..................................(3)
Avit 303                     ...Introduction to Air Traffic Control.....(2)
Avit 308                     ...Aviation Safety........................................(3)
Avit 360                     ...Air Traffic Control—Tower Operations I.(4)
Avit 361                     ...Air Traffic Control—Tower Operations II.(4)
Avit 362                     ...Air Traffic Control—Tower Operations III.(4)
Avit 402                     ...Airport Planning and Administration.....(3)
Avit 403                     ...Aerospace Law...............................................(3)
Avit 463                     ...Advanced Air Traffic Control—Radar Operations I.(4)
Avit 464                     ...Advanced Air Traffic Control—Radar Operations II.(4)

OTHER REQUIREMENTS

BVEd 320                     ...Business Communication...........................(3)
Comm 210                     ...Interpersonal Communication...................(3)
Mgmt 305                     ...Managerial Concepts................................(3)
66

Eng 101 Composition I (3)
Eng 209 Technical and Business Writing (3)
Lang 101 Foreign Language (4)
Lang 102 Foreign Language (4)
Math 204 Survey of Calculus (3)
Arts and Humanities (other than Language) (1)
Math, Science and Technology (2)
Social Science (6)

AVIATION COURSES
Avit 100 Aviation Orientation ........................................ (1)
Avit 102 Introduction to Aviation ............................ (5)
Avit 104 Aviation History ............................................ (3)
Avit 250 Human Factors .......................................... (2)
Avit 251 Aircraft Systems and Instruments ....................... (3)
Avit 252 Basic Attitude Instrument Flying ....................... (3)
Avit 302 Air Transportation ....................................... (3)
Avit 303 Introduction to Air Traffic Control ........ (2)
Avit 308 Aviation Safety .......................................... (3)
Avit 353 Aerodynamics—Airplanes ............................... (3)
Avit 354 IFR Regulations and Procedures ................. (3)
Avit 355 Multi-Engine Systems and Procedures .............. (2)
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)
Avit 408 Business Communication ............................... (3)
Avit 428 Transport Category Aircraft Systems .......... (4)

OTHER REQUIREMENTS
ArSc 231 Aviation Meteorology I ..................................... (4)
BVED 320 Business Communication ............................. (3)

Plus electives to total 125 credits.

B.S. IN AERONAUTICS WITH A MAJOR IN FLIGHT EDUCATION

II. Center for Aerospace Sciences Requirements, page 35.
III. The following curriculum:

GENERAL EDUCATION COURSES
ArSc 110 Meteorology I ................................................. (4)
Comm 161 Fundamentals of Public Speaking ............... (3)
CSci 110 Computer Programming I ............................ (3)
Econ 201 Principles of Microeconomics ...................... (3)
Eng 101 Composition I ............................................. (3)
Eng 209 Technical and Business Writing ................ (3)
Lang 101 Foreign Language .................................. (4)
Lang 102 Foreign Language ................................ (4)
Math 204 Survey of Calculus .................................. (3)
Pey 101 Introduction to Psychology ........................ (3)
Arts and Humanities (other than Language) (1)
Math, Science and Technology (2)
Social Science (3)

AVIATION COURSES
Avit 100 Aviation Orientation ........................................ (1)
Avit 102 Introduction to Aviation ................................ (5)
Avit 104 Aviation History ........................................... (3)
Avit 251 Aircraft Systems and Instruments ................. (3)
Avit 252 Basic Attitude Instrument Flying ................... (3)
Avit 302 Air Transportation ....................................... (3)
Avit 303 Introduction to Air Traffic Control ........ (2)
Avit 308 Aviation Safety .......................................... (3)
Avit 353 Aerodynamics—Airplanes ............................... (3)
Avit 354 IFR Regulations and Procedures ................. (3)
Avit 355 Multi-Engine Systems and Procedures .............. (2)
Avit 402 Airport Planning and Administration ............... (3)
Avit 403 Aerospace Law ........................................... (3)
Avit 408 Business Communication ............................... (3)
Avit 409 Advanced Aircraft Operations ....................... (3)
Avit 428 Transport Category Aircraft Systems .......... (4)

OTHER REQUIREMENTS
ArSc 231 Aviation Meteorology I ..................................... (4)
BVED 320 Business Communication ............................. (3)

BVED 403 Professional Training Techniques ............... (3)
BVED 444 Philosophy of Vocational Education ............. (3)
Pey 213 Educational Psychology ................................ (3)

Plus electives to total 125 credits

MINORS IN AVIATION

MINOR IN PROFESSIONAL FLIGHT

Required: 30 hours, including:
Avit 102 Introduction to Aviation ................................ (5)
Avit 251 Aircraft Systems and Instruments ................. (3)
Avit 252 Basic Attitude Instrument Flying ................... (3)
Avit 308 Aviation Safety .......................................... (3)
Avit 353 Aerodynamics—Airplanes ............................... (3)
Avit 354 IFR Regulations and Procedures ................. (3)
Avit 355 Multi-Engine Systems and Procedures .............. (2)
ArSc 110 Meteorology I ............................................. (4)
ArSc 231 Aviation Meteorology I ..................................... (4)

MINOR IN AVIATION ADMINISTRATION

Required: 27 hours, including:
Avit 102 Introduction to Aviation ................................ (5)
Avit 104 Aviation History ........................................... (3)
Avit 302 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)
ArSc 110 Meteorology I ............................................. (4)

COURSES

All Avit 300 level courses are restricted to sophomore status. 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

102. Introduction to Aviation. 5 credits. Co-requisite: ArSc 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 aerodynamic, airport 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. The student must complete the appropriate flight lessons to satisfactorily complete the course. F, SS

104. Aviation History. 3 credits. Topics covered include history from its very beginning through the Apollo space program. It will be a composite of lecture and videos and will also require written research papers. F, S

142. Introduction to Aviation-Helicopter. 5 credits. Co-requisite: ArSc 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 in the Private Helicopter course to satisfactorily complete the course. F, S

193. Glider Certification. 1 credit. Prerequisite: Avit 102. S/U grading only.

200. Topics in Aviation. 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

241. Aerodynamics and Performance-Helicopter. 3 credits. Prerequisite: Avit 142. This course will provide 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 Pilot Helicopter course to satisfactorily complete the course. F

242. Aircraft Systems-Helicopter. 3 credits. Prerequisite: Avit 241. Provides 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. S

250. Human Factors. 2 credits. This course introduces the student to the human element of the “human-machine interface” in aviation. The course is designed to provide the student with a basic understanding of the human factors concepts including psychological and basic physiological limitations of humans operating in complex environments and design elements that allow for optimizing human machine interaction. F, S

251. Aircraft Systems and Instruments. 3 credits. Prerequisite: Avit 102. Co-requisite: Avit 252. This course provides an in-depth study of flight instruments as well as recirculating engine, propeller, electrical, environmental, hydraulic, pneumatic, fuel, ignition, lubrication, and pressurization systems. F, S, SS
252. Basic Attitude Instrument Flying. 3 credits. Prerequisite: Avit 102; corequisite: Avit 251. This course will include an in-depth study of basic attitude instrument flying. In addition, the operation, interpretation and practical use of VOR, ADF, DME, RNAV, RMI, HSI, and Flight Director systems will be covered along with the use of different types of instrument charts required for IFR flight. The student must complete the appropriate flight lessons to satisfactorily complete the course. F, S, SS

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 theory to aircraft electrical systems. The course includes basic theory of 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. S/ Z

302. Air Transportation. 3 credits. Prerequisite: Avit 102 or consent of the instructor. Provides a broad understanding of all aspects of the air transportation industry. The scope of course material includes knowledge 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 profit or loss situation. F, S

303. Introduction to Air Traffic Control. 2 credits. Prerequisite: Avit 102 or consent of the instructor. Major elements of this course include the development of ATC personnel and technology, the physiological and psychological requirements of an ATC career, the components and functions of the National Airspace System, the structure and functions of both Terminal and En Route ATC facilities and the impact of major technological changes anticipated in the future. F, S, SS

308. Flight Physiology. 3 credits. Prerequisite: Avit 250. This course provides an in-depth study of aeronautical factors for pilots. The course covers the recognition, treatment, and prevention of problems associated with exposure to reduced atmospheric pressure, sensory changes in flight, environmental stressors and health and wellness factors that can impact human performance in flight. The course includes "flight" in an altitude in an altitude chamber and exposure to a spatial disorientation demonstrator. F, S

327. Gas Turbine Engines. 3 credits. Prerequisite: Avit 355. This course will provide an in-depth introduction to the turbine engine through the study of its development, theory of operation and the function of turbine engine components. F

335. Air Transport Regulations. 2 credits. Prerequisite: Avit 355. This course provides an in-depth study of the regulations governing scheduled air carriers. The study of Federal Aviation regulations part 135 and part 121 will be included, as well as the international regulations as established by the International Civil Aviation Organization. F, S

337. Cooperative Education. 1-8 credits. May be repeated to a maximum of 24 credits. Co-op credits may not be substituted for any other required courses in curriculum. Pre-requisite: acceptance into a co-op position with cooperating industry and approval by Aviation Department. S-U grading only. S

344. Basic Attitude Instruments and Navigation-Helicopter. 3 credits. Prereq. or co-requisite: Avit 381. This course will include an in-depth study of flight instruments for instrument flight rules and helicopters. In addition, the operation, interpretation and practical use of VOR, ADF, DME, RNAV, and RMI will be covered. The student must complete the appropriate flight lessons in the Instrument Helicopter course to satisfactorily complete the course. F

345. Instrument Flight Procedures-Helicopter. 3 credits. Prereq. or co-requisite: Avit 344. This course will provide the student with a detailed study of ATC procedures, ATC system and the effects of the environment as they relate to helicopter operations. The student must complete the appropriate flight lessons to satisfactorily complete the course. S

350. Aerosciences—Airplanes. 3 credits. Prerequisite: Avit 251, 252 and Math 103 or equivalent. Corequisite: Avit 353. This course will provide an understanding of aerodynamics, performance, stability, control, weight and balance, and special flight conditions as appropriate for commercial pilots. A discussion of commercial maneuvers and flight computers is included. F, S, SS

354. IFR Regulations and Procedures. 3 credits. Prerequisite: Avit 251 and 252. Corequisite: Avit 353. 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

355. Multi-Engine Systems and Procedures. 2 credits. Prerequisites: Avit 353 and 354. This course covers the operation necessary to operate light twin-engine aircraft. Normal and abnormal procedures are included along with a discussion of the systems and aerodynamics normally associated with these aircraft. Regulations for commercial pilots are included. The student must complete the appropriate flight lessons to satisfactorily complete the course. F, S, SS

360. ATC: Tower Operations I. 4 credits. Prerequisite: Avit 303. Provides an orientation to basic fundamental tower operations and procedures. Basic tower concepts and theories, positions, facility levels (1-3), standard terminology and air traffic orientation. F, S

361. ATC: Tower Operations II. 4 credits. Prerequisite: Avit 360. Provides the student with non-tower control tower operations, followed by VFR-only tower procedures. The procedural knowledge covers the basic to the advanced control tower operations and structure. F, S

362. ATC: Advanced Tower Operations III. 4 credits. Prerequisite: Avit 361. Combines the first two courses together with Terminal Radar Approach Control in the Tower (TRACAB) operations. Training includes tower radar operations, separation requirements, procedures, and knowledge of radar, non-tower, and tower operations. F-S

370. Special Aerospace Topics. 1-4 credits. F, S

380. Aviation Internship. 1-4 credits. Prerequisites: Will vary depending on the area of the internship. Aviation internships 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 the manufacturer and fixed-base operator level and within the weather modification industry. The weather modification internships will be available only with the necessary federal funding or contractor support. F, S, SS

395. Seaplane Certification. 1 credit. Prerequisite: Avit 354 or consent of instructor. The seaplane certification course includes all the necessary classroom and flight instruction for the student to acquire the skill, knowledge, and experience for obtaining a seaplane rating on his/her commercial pilot’s certificate. The course will include, but not be limited to, full flap water takeoff and water emergency takeoff and landings, taxiing, sailing and docking, glassy water operations, cross-wind and down-wind takeoffs and landings, and the general care and operation of a seaplane. S-U grading only. F, S, SS

396. Conventional Aircraft Operations. 1 credit. Prerequisite: Avit 102. Provides the necessary ground school and dual flight instruction for 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. S-U grading only. F, S, SS

399. Introduction to Aeronautical Flight. 1 credit. Prerequisite: Avit 102. To introduce, analyze and fly some of the more advanced flight maneuvers defined as aerobatics. Basic aerobatic maneuvers will be flown during the course including loops, spins, rolls, and inverted flight, with focused variations and combinations of maneuvers demonstrated in flight. S-U grading only. F, S, SS

400. Methods and Materials in Teaching Aviation. 3 credits. Prerequisite: Junior standing. 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/representation and writing tests. Discussion of teaching methods and critiques of peers will also be included. S/ Z

402. Airport Planning and Administration. 3 credits. This is the first of a two course curriculum in airport administration. This initial 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 Legislation governing the operation and administration of commercial service airports within the United States. F, S

403. Aerospace Law. 3 credits. Prerequisite: Avit 302 and senior standing. Designed to cover the scope of all regulations concerning aviation (traffic rules, agencies, operation, aircraft and people) in accordance with federal, state and local agencies. F, S

405. Airline Operations and Management. 3 credits. Prerequisite: Avit 302. Designed to cover the complex area of operational techniques and problems confronting the airlines today. Officials from airlines will conduct discussions on real and immediate problems in an airlines operation. Market research and passenger trends, route feasibility studies, and criteria for transport aircraft, will be stressed. F, S

407. General Aviation Operations and Management. 3 credits. Prerequisite: Avit 302. Aspects of the operation and management of corporate flight departments, fixed-base operations and air cargo operations will be discussed. Pertinent regulations including FAR parts 91, 135 and regulations pertaining to transport of hazardous materials will be studied. Aircraft and equipment evaluation will be studied. F, S

408. Flight Engineer Certification. 3 credits. Prerequisite: Avit 354. Provides the classroom course of study utilizing a professional course to prepare the student for the written examination of an unrestricted Flight Engineer Certificate. Course content includes an in-depth knowledge of all aircraft systems as experiences on a large jet transport. S

409. Advanced Aircraft Operations. 3 credits. Prerequisites: Avit 355. The topics of study include high speed and high altitude aerodynamics, physiological aspects of high altitude flight, hazards associated with operations near high speed buffer boundaries, effects of turbulence on high speed aircraft, the effects of maneuvering load factors, along with the general study of the typical business jet systems management. F, S

410. Airline Transport Pilot Certification. 3 credits. Prerequisite: Avit 308 and 355. Co-requisite: Avit 491. Provides a detailed and comprehensive background of aeronautical and meteorological knowledge needed to meet the knowledge requirements of the FAA airline transport pilot written examinations. The course includes advanced computer programs, transport-type airplane weight and balance computation, meteorology with emphasis on upper level phenomena, depictions and interpretation, regulations applicable to airline operations and performance computations. On demand.

411. International and Long Range Navigation. 3 credits. Prerequisites: Avit 354 and Math 103 or 104. This course provides and understanding of global charting systems, great circle route and waypoint plotting. Problems and methods of international flight and modern systems of long range navigation are studied. Concepts and theories, positions, facility levels (1-3), standard terminology and airspace orientation. F, S

414. CFI Certification. 5 credits. Prerequisite: Avit 355. Provides the student with a detailed study of the responsibilities and knowledge 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 syllabus, 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 CFII 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 systems, 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 414 and 355. 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, flight safety concerns and instrument flight maneuvers in multi-engine airplanes. The student must complete the associated flight lessons in the Multi-engine Aircraft CFII course to satisfactorily complete the course. F, S, SS

421. Advanced Aerodynamics. 3 credits. Prerequisite: Avit 355 or consent of the instructor. This course provides an in-depth study of aerodynamics fundamentals associated with transonic and supersonic flight.

422. Advanced Flight Lab I. 1 credit. Prerequisite: Avit 355. An advanced flight lab consisting of multi-engine and instrument flying. Also includes tailwheel and aerobatic flight. Air Transport majors only. F

423. Advanced Flight Lab II. 1 credit. Prerequisite: Avit 422. A continuation of Avit 422. Multi-engine, instrument, tailwheel and aerobatic flight. May also include turbine simulator time. Air Transport majors only. S

428. Transport Category Aircraft Systems. 4 credits. Prerequisite: Avit 355 or consent of the instructor. This course will provide an in-depth study of the complex systems of today’s air transport jet aircraft, including Boeing 747 and Airbus Aircraft, it provides initial study of heavy aircraft Auxiliary Power Unit, fire, pneumatic, environmental, pressurization, fuel, and electrical systems. Both normal and abnormal system operations will be studied. S

429. Turboprop Operations. 4 credits. Prerequisite: Avit 421 or consent of the instructor. This course will provide an introduction to the study of turboprop aircraft systems. The specific application of turboprop engines previously covered in Avit 327, Gas Turbine Engines, will be made. The type of aircraft studied may vary from semester to semester. S

430. Crew Resource Management. 2 credits. Prerequisite: Avit 250 and 355. This course will provide an in-depth study of the various aspects of flight-related decision making during the crew resource management process. The course will also provide practical teaching experiences. The student must complete the appropriate flight lessons in the CFII Flight Course to satisfactorily complete the course. F

445. Instrument Flight Instructor – Helicopter. 4 credits. Prerequisite: Avit 444. Provides the student with an in-depth study of the responsibilities and techniques to be used as a helicopter flight instructor. Additional study of instrument flight systems, charts, publications and rules of the IFR environment as they pertain to helicopter operations will be covered. The course will provide practical teaching experience. The student must complete the appropriate flight lessons in the Instrument Flight Instructor-Helicopter Course to satisfactorily complete the course. S

463. Rotorcraft Instrument Certification. 1 credit. Prerequisite: Avit 142. At the completion of this course, helicopter students will have completed all FAA requirements for a Rotorcraft Commercial Pilot’s Certificate with an instrument rating. S-U grading only. S

491. Airline Transport Pilot Certification Lab. 2 credits. Prerequisites: Avit 308 and 355. Co-requisite: Avit 410. 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.

497. Readings in Aviation. 1-3 credits. Prerequisite: senior standing. Repeatable to 9 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 to subjects including airport traffic count, student flight activities, airport management problems, and statistical reports. F, S

Biochemistry and Molecular Biology (BiCh)

R. Nordlie (Chair), Detke, Johnson, Knuli, Lambeth, Milavetz, Norris, Shabb and Sukalski

Courses

301. Biochemistry Lecture. 3 credits. Three lectures per week. Prerequisite: Organic Chemistry (Chemistry 212, or Chemistry 305, or Chemistry 351, or equivalent). Topics include enzymology, bioenergetics, metabolism and its regulation; nutrition; cell structure and function; synthesis, structure and function of macromolecules; gene expression.

302. Biochemistry Laboratory. 3 credits. Prerequisites: Organic Chemistry (Chemistry 212, or 305, or 351, or equivalent and Path 336). The laboratory (associated with Biochemistry 301) consists primarily of chemical analysis of biological materials. Fundamental clinical laboratory procedures employing modern instrumentation are carried out.

Biology (Biol)

A. Fivizzani (Chair), Carmichael, Crawford, Cronin, Gerber, Hughes, Kelsch, LaDuke, Lang, Newman, Pyle, Schlosser, Sheridan, and Wrenn

The Department of Biology offers concentrated study in Biology and in Fisheries and Wildlife Biology. The objective of these majors is to provide students with a broad knowledge of modern biology through training in each of the major areas of biological science: ecologic, genetic, molecular, morphologic and systematic biology. 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 an herbarium, three greenhouses, environmental chambers, animal rooms for terrestrial and aquatic organisms, observation rooms, vertebrate and invertebrate museums, a darkroom, and isotope 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
Any 200, 300, or 400 level biology course not listed above or any of the above courses not used to meet area requirement may be taken as an elective. No more than one 200 level course may be used toward the 40 hour major.

Option C. Zoology Emphasis

The zoology emphasis is designed for students preparing for work with animals in zoos and museums and in industrial and agricultural laboratories, as well as for graduate studies leading to college teaching and research in zoology.

40 major hours including:

- Biol 101, 102. Introduction to Biology (6)
- Biol 101L, 102L. Introduction to Biology Lab (2)
- Biol 332. Ecology (3)
- Biol 332L. Ecology Lab (1)
- Biol 333. Population Biology (3)
- Biol 338L. Animal Behavior Lab (2)
- Biol 339. Animal Behavior (2)
- Biol 343. Aquatic Ecology (3)
- Biol 433. Aquatic Ecology Lab (1)
- Biol 430. Biometry (3)

Any 200, 300, or 400 level biology course not listed above or any of the above courses not used to meet area requirement may be taken as an elective. No more than one 200 level course may be used toward the 40 hour major.

Option D. Pre-Health Sciences Emphasis

Students interested in medicine or in allied medical fields such as dentistry, veterinary medicine, medical laboratory research, etc., will find this emphasis appropriate.

40 major hours, including:

- Biol 101, 102. Introduction to Biology (6)
- Biol 101L, 102L. Introduction to Biology Lab (2)
- Biol 332. Ecology (3)
- Biol 357. Genetics (3)
- Biol 341. Cell Biology (3)
- Biol 341L. Cell Biology Lab (1)
- Biol 338. Animal Behavior (2)
- Biol 339L. Animal Behavior Lab (2)
- Biol 343. Aquatic Ecology (3)
- Biol 342. Physiology of Organisms and Systems (4)
- Biol 367. Histology (3)
- Biol 369L. Histology Lab (2)
- Biol 370. Vertebrate Zoology (3)
- Biol 371. Anatomy and Adaptations Lab (2)
- Biol 235. Human Environment (2)
- or
- Biol 250. Human Sexuality (3)

Any 200, 300, or 400 level biology course not listed above or any of the above courses not used to meet area requirements may be taken as an elective. No more than one 200 level course can be used toward the 40 hour major.

III. Required in other departments (for all options):

- Phys 203, 204. General Physics (8)
- Level II proficiency in a foreign language (8)
- Chem 105. General Chemistry I (4)
- Chem 106. General Chemistry II and Qualitative Analysis (4)
- Bioch 301. Biochemistry Lecture (3)
- or
- Chem 305, 306. Organic Chemistry (10)
6-8 hours from:........................................................(6-8)
   Math 103 or 104 .................. College Algebra or Finite Math .......(3)
   Math 204 .................. Survey of Calculus ...................(3)
or
   Math 211, 212 .................. Calculus I and II ..................(8)

Teacher Certification

Students seeking secondary teacher certification in Biology must complete the Department of Teaching and Learning requirements in Secondary Education on page 148.

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 ................................................. (2)
   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 212 Organic Chemistry (5) and BioCh 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 Introduction to 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 200 (see pg. 148).

Biology majors seeking secondary certification must have an advisor 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 hours including:

   I. General Education Requirements, see pages 27-30.

      II. The Following Curriculum: 52-54 major hours, including:

      Biol 101, 102 .................. Introduction to Biology ................ (6)
      Biol 101L, 102L ........ Introduction to Biology Lab ................ (2)
      Biol 332, 332L .................. General Ecology and Lab .......... (4)
      Biol 338 .................. Animal Behavior ...................................... (2)
      Biol 357 .................. Genetics .................................................... (3)
      Biol 431 .................. Wildlife Management................................. (4)
      Biol 438 .................. Fisheries Management ............................ (3)
      Biol 442 .................. Physiology of Organisms and Systems ........ (4)
      Biol 470 .................. Biometry .................................................. (3)

   2 hours from: ................................................(2)
      Biol 338L .................. Animal Behavior Lab ..................(2)
      Biol 371 .................. Anatomy and Adaptations Lab ..........(2)
   3 hours from: .............................................(3)
      Biol 312 .................. Evolution .................................................. (3)
      Biol 333 .................. Population Biology .............................. (3)
      Biol 370 .................. Vertebrate Zoology ............................... (3)

   3-4 hours from: ......................................(3-4)
      Biol 363 .................. Entomology .................................................. (4)
      Biol 364, 364L ............ Parasitology and Lab .................. (4)
      Biol 375 .................. Invertebrate Zoology .............................. (4)
      Biol 382 .................. Fish and Wildlife Disease ................. (3)

   3 hours from: .............................................(3)
      BioCh 301 .................. Biochemistry Lecture ..................... (3)
      Biol 341 .................. Cell Biology ................................................. (3)
   4 hours from: .............................................(4)
      Biol 336 .................. Systematic Botany ............................................. (4)
      Biol 360 .................. Freshwater Algae ................................. (4)

FISHERIES OR WILDLIFE OPTION: ................................. (6-7)

      Fisheries Option
      Biol 425 .................. Ichthyology .................................................. (3)
      Biol 433, 433L ............ Aquatic Ecology and Lab .................. (4)
      Wildlife Option
      Biol 427 .................. Ornithology .................................................. (3)

Biol 428 .................. Mammalogy .................................................. (3)

*Biological Station or Field Work ......................................(No Credit)

III. Required in other departments:

   Chem 105 .................. General Chemistry I .................. (4)
   Chem 106 .................. General Chemistry II ..................(4)
   Chem 212 .................. Organic Chemistry .................. (5)
   Comm 161 .................. Fundamentals of Public Speaking ........ (3)
   4 hours from: .............................................(4)
   Geol 101 .................. Introduction to Geology ..................(4)
   Phys 203 .................. General Physics ................................. (4)
   6 or 8 hours from: .........................................(6-8)
      Biol 103 .................. College Algebra ............................................. (3)
      OR
      Math 104 .................. Finite Mathematics ................................. (3)
      Math 204 .................. Survey of Calculus ................................. (3)
      OR
      Biol 211, 212 ................. Calculus I and II ..................(8)

*One summer of field experience or study at a recognized biological station is required.

MINOR IN BIOLOGY

Required 20 hours, including:

   Biol 101, 102 ........ Introduction to Biology .............................. (6)
   Biol 101L, 102L ........ Introduction to Biology Lab .................. (2)
   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.

Courses


100. Principles of Biology, 3 credits. Intended for non-science majors seeking general knowledge and cultural appreciation of contemporary biology. Does not serve as a prerequisite for 101 or any other biology course. Students may not normally receive credit for both 100 and 101-102. F,S

100L. Principles of Biology Laboratory, 1 credit. Prerequisite: Biol 100. A basic biology laboratory to complement Biol 100. F,S

101, 102. Introduction to Biology, 6 credits. Basic concepts of biology with emphasis on life’s diversity, processes, and man’s place in nature. Broadly designed to satisfy the needs of those pursuing biological and preprofessional curricula. F,S

101L, 102L. Introduction to Biology Laboratory, 2 credits. Prerequisite or co-requisite: Biol 101, 102. A contemporary biology laboratory to complement Biol 101, 102. F,S

200. Topics in Biology, 1-3 credits. Special topics in biology. Primarily intended for non-majors. May be repeated if topic is different. On demand.

230. Natural History of the Northern Plains, 2 credits. This is a general course for non-majors. Topics include the ecological setting of the Northern Plains, ecological principles, regional communities, migration, winter ecology, courtship and reproduction, regional faunas, practical natural history, and human values in natural history. S

235. Human Environment, 2 credits. A study of the effect of human activity upon the environment in which we live. F

240. Wildlife Conservation, 2 credits. Basic principles and philosophies of wildlife conservation in North America. F

250. Human Sexuality, 3 credits. Introduction to the biological basis for human reproduction and human sexual behavior. S

Advanced Courses

Biology 101, 101L, 102 and 102L 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

332. General Ecology, 3 credits. Prerequisite: course in systems biology 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

336. Systematic Botany, 4 credits. Structure and classification of vascular plants with emphasis on field studies. F

337. Cooperative Education, 1-8 credits, repeatable to 24 credits. Prerequisites: Sophomore standing and approval of the department chair and acceptance by a supervisory faculty member. A practical work experience with an employer under the direction of a supervisory faculty member. A written final report will be required and will be used as a basis for evaluation. S/U grading only. F,S,SS


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
cellular level including chemical composition and characterization, enzyme kinetics, metabolism and membrane transport. S

357. Genetics. 3 credits. An introduction to genetics, with emphasis on classical genetic analysis and the biochemistry of gene transmission, expression and regulation. S

360. Freshwater Algae. 4 credits. A survey of the major groups of freshwater and marine algae with particular emphasis on their morphology, physiology, ecology and systematics. F/S

363. Entomology. 4 credits. Structure, functions, 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

369. Histology. 2 credits. Micromscopical anatomy of vertebrate tissues and organs, with emphasis on man and other mammals. S

369L. Histology Laboratory. 2 credits. Prerequisite or co-requisite: Biol 369. A basic histology laboratory to complement Biol 369. S

370. Vertebrate Zoology. 3 credits. Vertebrate evolution and natural history stressing the relationships of anatomy, ecology, physiology and behavior to one another. F

371. Anatomy and Adaptations Laboratory. 2 credits. Prerequisite or co-requisite: Biology 370. Dissections of representatives of various vertebrate classes; examination of morphological adaptations. F

372. Natural History of the Tropics. 3 credits. Prerequisite: Consent of the instructor. Interdisciplinary field course emphasizing study of tropical environments, flora and fauna, their natural history & conservation. Lectures at UND followed by field-work at terrestrial and marine sites in Costa Rica. Semianually.

373. Vertebrate Natural History. 3 credits. Classification, distribution and habits of vertebrates. S/F

375. Invertebrate Zoology. 4 credits. Structure, functions, development, classification and habits of the invertebrates (exclusive of protozoans and insects.) S

378. Developmental Biology. 3 credits. Prerequisite: Biol 357. A study of the diverse developmental systems of animals, plants and microbial organisms. F/S

382. Ichthyology. 3 credits. Structure and function, anatomy, physiology, behavior, classification, distribution and ecological aspects of fishes. F

385. Ornithology. 3 credits. Classification, identification, morphology, distribution, ecology and life history of birds. S

386. Mammalogy. 3 credits. Classification, identification, morphology, distribution, ecology and life history of mammals. F

411. Wildlife Management. 4 credits. Theory and methods of management of game populations. F

412. Fish and Wildlife Disease. 3 credits. A detailed survey of bacteriologic, viral, and mycotic diseases, parasites and pathological conditions found in fish and wildlife species. Material covered will include importance, etiology, diagnosis, symptoms, lesions, pathogenicity, vectors and modes of transmission. F/S

432. Aquatic Zoology. 3 credits. Analysis of the relationships between organisms and their physical, chemical and biological environments in freshwater ecosystems. F

433L. Aquatic Zoology Laboratory. 1 credit. Co-requisite: Biol 433. Field and laboratory activities to complement Biology 433. F

438. Fisheries Management. 3 credits. Concepts and approaches to the management of freshwater fisheries. Course will include discussion of life histories and requirements of important regional sport fish. S

442. Physiology of Organisms and Systems. 4 credits. Study of the physiology of organs and organ systems in the animal kingdom. F

470. Biometry. 3 credits. Analysis and design of experiments with emphasis upon biological models. Includes descriptive and inferential statistics through analysis of variance and introductory problems of bioassay. S

477. Concepts of Biology. 2 credits. Prerequisite: Senior status in biological science or consent of instructor. Consideration of the unifying concepts in biology. On demand.

491. Directed Studies. 1 to 4 credits. May be repeated up to a total of 9 credits. Designed to meet the needs of individual students in the area of faculty specialization. Consent of instructor. F/S

498. Research. 1 to 4 credits. Open to qualified majors. Prerequisite: Consent of instructor. Research conducted under the supervision of a faculty member. F/S

499. 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
B.S.E.D. WITH A MAJOR IN BUSINESS EDUCATION

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. BVED Core Curriculum, including:

- Acct 200, 201: Elements of Accounting I & II (6)
- Acct 315: Business in the Legal Environment (3)
- BVED 101: Keyboarding (1)
- BVED 102: Intermediate Keyboarding (2)
- BVED 303: Methods of Teaching Business Education—General Methods (1)
- BVED 320: Business Communications (3)
- BVED 380: DECA-Student Leadership Practicum (3)
- BVED 402: Curriculum Development in Vocational Marketing Education (3)
- BVED 403: Prof Training Techniques in Business Education (3)
- BVED 421: Coordinating Techniques (2)
- BVED 431: Career and Vocational Education of Special Needs Students (3)
- Mgmt 300: Principles of Management (3)
- Mgmt 301: Principles of Marketing (3)
- Mrkt 301: Principles of Marketing (3)
- Mgmt 311: Personal Selling (3)
- Mgmt 312: Advertising (3)
- Mgmt 315: Retail Management (3)

III. One of the Following Concentrations:

CONCENTRATION I—VOCATIONAL BUSINESS AND OFFICE EDUCATION—
for those preparing to teach all business subjects. The following additional courses are required for this concentration:

- BVED 206: Word Processing Applications (3)
- BVED 303: Methods of Teaching Business Subjects (3-5)
- BVED 305: Microcomputer Applications for Business (3)
- BVED 315: Introduction to Records Management (3)
- Electives: Selected courses from Business and Vocational Education and/or from the College of Business and Public Administration.

CONCENTRATION II—ACCOUNTING AND BUSINESS EDUCATION—
for those who wish to teach accounting, business law, data processing, and the basic business subjects. The following additional courses are required for this concentration:

- Acct 301, 302: Intermediate Accounting I & II (8)
- Acct 305: Cost Accounting I (3)
- BVED 303: Methods of Teaching Business Subjects (3-5)
- BVED 305: Microcomputer Applications for Business (3)
- BVED 315: Introduction to Records Management (3)
- Electives: Approved by Chairperson (6)
- BVED 421: Coordinating Techniques (2)
- BVED 431: Career and Voc Ed of Special Needs Students (3)

**Required for office education coordinators in reimbursable vocational programs.

B.S.E.D. WITH A MAJOR IN VOCATIONAL MARKETING EDUCATION

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. The Following Curriculum:

- Acct 200, 201: Elements of Accounting I & II (6)
- Acct 315: Business in the Legal Environment (3)
- BVED 101: Keyboarding (1)
- BVED 102: Intermediate Keyboarding (2)
- BVED 303: Methods of Teaching Business Education—General Methods (1)
- BVED 320: Business Communications (3)
- BVED 380: DECA-Student Leadership Practicum (3)
- BVED 402: Curriculum Development in Vocational Marketing Education (3)
- BVED 403: Prof Training Techniques in Business Education (3)
- BVED 421: Coordinating Techniques (2)
- BVED 431: Career and Vocational Education of Special Needs Students (3)
- BVED 444: Philosophy of Vocational Education (3)
- BVED 460: Methods of Teaching Vocational Marketing Education (2)
- Comm 161: Fundamentals of Public Speaking (3)
- Econ 201: Principles of Microeconomics (3)
- Econ 202: Principles of Macroeconomics (3)
- Mgmt 300: Principles of Management (3)

** Required 125 hours, including:

Minor in Vocational Marketing Education

20 semester hours, including:

- BVED 380: DECA-Student Leadership Practicum (1)
- BVED 402: Curriculum Development in Vocational Marketing Education (3)
- BVED 403: Prof Training Techniques in Business and Education (3)
- BVED 460: Methods of Teaching Vocational Marketing Education (2)
- Mgmt 311: Personal Selling (3)
- Mgmt 301: Principles of Marketing (3)
- Electives: Selected courses from Business and Vocational Education and/or from the College of Business and Public Administration.

Minor in Business Education Teaching

22 hours, including:

- BVED 102: Intermediate Keyboarding (2)
- BVED 103: Advanced Keyboarding (2)
- BVED 206: Word Processing Applications (3)
- BVED 305: Microcomputer Applications for Business (3)
- BVED 315: Introduction to Records Management (3)
- BVED 322: Executive Secretarial Procedures (3)

Elec five hours from courses in BVED and/or from the College of Business and Public Administration.

Minor in Business Education Teaching

22 hours, including:

- BVED 102: Intermediate Keyboarding (2)
- BVED 103: Advanced Keyboarding (2)
- BVED 206: Word Processing Applications (3)
- BVED 305: Microcomputer Applications for Business (3)
- BVED 315: Introduction to Records Management (3)
- BVED 322: Executive Secretarial Procedures (3)

Minor in Business Administration

23 hours, including:

- Mgmt 300: Principles of Management (3)
- Mgmt 311: Fundamentals of Management Information Systems (4)
- BVED 305: Microcomputer Applications for Business (3)
- BVED 315: Introduction to Records Management (3)
- BVED 322: Executive Secretarial Procedures (3)

Elect five hours from courses in BVED.

Minor in Business Administration

23 hours, including:

- BVED 102: Intermediate Keyboarding (2)
- BVED 103: Advanced Keyboarding (2)
- BVED 206: Word Processing Applications (3)
- BVED 305: Microcomputer Applications for Business (3)
- BVED 308: Office Management (3)
- BVED 315: Introduction to Records Management (3)
- BVED 322: Executive Secretarial Procedures (3)

Elect five hours from courses in BVED.

Minors in Business and Public Administration

B.A. WITH A MAJOR IN INFORMATION MANAGEMENT

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. College of Business and Public Administration requirements, see page 39 and including:

- Acct 200, 201: Elements of Accounting I & II (6)
- Acct 315: Business in the Legal Environment (3)
- Comm 161: Fundamentals of Public Speaking (3)
- Econ 201: Principles of Microeconomics (3)
- Econ 202: Principles of Macroeconomics (3)
- Mgmt 300: Principles of Management (3)
- Mgmt 301: Principles of Marketing (3)
- Mgmt 302: Principles of Marketing (3)
- Mgmt 311: Personal Selling (3)
- Mgmt 312: Advertising (3)
- Mgmt 315: Retail Management (3)
- Econ 310: Principles of Financial Management (2)
- Econ 410: Problems in Financial Management (1)
- Math 104: Finite Mathematics (3)
- Mgmt 401: Survey of Calculus (3)
- Mgmt 300: Principles of Management (3)
- Mgmt 301: Principles of Marketing (3)
- Mgmt 311: Personal Selling (3)
- Mgmt 312: Advertising (3)
- Mgmt 315: Retail Management (3)
- Econ 410: Problems in Financial Management (1)
- Math 104: Finite Mathematics (3)
- Mgmt 401: Survey of Calculus (3)
III. Information Management Major Courses:

This major is designed to prepare students for positions in information management, office management, office automation, records management, systems analysis and design, telecommunications, and related fields.

BVED 102. Intermediate Keyboarding. 2 credits.

BVED 308. Office Management. 3 credits.

BVED 309. Information Management Systems. 3 credits.

BVED 315. Introduction to Records Management. 3 credits.

BVED 320. Business Communications. 3 credits.

BVED 405. Records Management Systems. 3 credits.

BVED 409. Data Resource Management. 3 credits.

BVED 411. Information Management Seminar. 1 to 5 credits.

BVED 413. Telecommunications. 3 credits.

BVED 414. Office Systems Design. 3 credits.

Mgmt 302. Human Resource Management. 3 credits.

Courses

Students who have had prior training in keyboarding are eligible for advanced placement. They should consult with a member of the Business and Vocational Education staff to determine appropriate course level.

101. Keyboarding. 1 credit. A half-semester course offering basic instruction and practice in learning to use proper finger placement for touch typing of the alphabetic keyboard. Development of techniques and manipulative skills for operating the keyboard of a word processing equipment, microcomputers, or computer terminals. F,S


103. Advanced Keyboarding. 2 credits. Prerequisites: BVED 102 or equivalent. Skill development, rough drafts, statistical keyboarding, preparation of manuscripts, reports, legal forms, and display typing. F

105. Microcomputer Applications. 3 credits. Emphasis on the development of proficiency in the use of microcomputers in business. Prerequisites: BVED 103. Orientation to word processing concepts, hands-on applications, and skill development on dictation/transcription equipment. F


303. Methods of Teaching Business Education. 1 to 5 credits. Five areas of teaching methods compose the course: (a) general methods, (b) keyboarding methods, (c) local area networking methods, (d) accounting/bookkeeping methods, (e) entrepreneurship methods; each to be taught for an equal number of weeks and each to be one hour credit. The general methods area and entrepreneurship methods area are required of all business education and vocational marketing education students. Selection of other areas is determined by curricula in which students are enrolled. F

305. Microcomputer Applications for Business. 3 credits. Prerequisites: BVED 217. Development of proficiency in the use of microcomputers in business. Emphasis is on operating system use, database software to develop and query business applications, and programming with database software. F,S

308. Office Management. 3 credits. Introduction to information management and office management concepts and technologies including office automation, office facilities development, technology selection and implementation, state reports, advisory committees, public relations, labor laws, program justifications, organization and supervision of cooperative programs. F

315. Introduction to Records Management. 3 credits. An orientation to business records management including systematic control over the creation, distribution, utilization, retention, storage, protection and final disposition of all types of records within an organization. F,S

320. Business Communications. 3 credits. Composition of business letters and reports with emphasis on clarity, coherence, effective presentation and logical organization. It includes a brief review of writing mechanics. F,S

322. Executive Secretarial Procedures. 3 credits. Prerequisite: BVED 206. Advanced word processing concepts and applications as well as desktop publishing, computerized shorthand, and other technologies. F

337. Cooperative Education. 1-6 credits, repeatable to 12 credits. Prerequisites: Overall GPA 2.5; approval of the Director of BVED Cooperative Education. On-the-job compensated work experience in various areas related to Information Management, Marketing Education, and Business Education. S-U grading only. F,S,SS

380. DECA—Student Leadership Practicum. 1 credit. Repeatable to 6 credits. Prerequisites: BVED 380. Planning, organizing, conducting, and advising in the DECA. F

402. Curriculum Development in Vocational Marketing Education. 3 credits. Planning and organizing Vocational Marketing Education curricula (Secondary, Post-Secondary, and Adult Education programs.) Includes competency-based individualized and group instructional activities and resources. F

403. Professional Training Techniques in Business and Education. 3 credits. Designing professional training programs and related projects for Vocational Marketing Education programs. Delivering professional presentations and utilizing appropriate training media, materials, and resources. Career opportunities and requirements in professional training are investigated. F,S

405. Records Management Systems. 3 credits. Prerequisite: BVED 315. Application of records management fundamentals to the design and management of records creation, maintenance, and disposal systems for paper, film, and computer records; cost and systems analysis; electronic filing; computer-assisted retrieval; micrographics systems; forms management systems; optical and video systems; emerging concepts. F

409. Data Resource Management. 3 credits. Prerequisite: BVED 309. Stress design and utilization of databases, emphasis on both microcomputer and microcomputer database development environments, integrity and security issues. Project oriented. F

411. Information Management Seminar. 2 credits. Seminar and field experience projects involving present and emerging information management topics including management of computer-based information systems, records management, imaging, office systems management, human resources management in technology-intensive environments, and personal-professional career development for new information management professionals. F

413. Telecommunications. 3 credits. Scope of business telecommunications, principles of design and systems and approach to solving communication problems. Includes: transmission systems, software, hardware applications. F

414. Office Systems Design. 3 credits. Prerequisites: BVED 308, 309 and 315. Design of new or improved office information processing systems. Heavy emphasis on the development of micro and minicomputer information systems including analysis, design, development, implementation, technical manuals, and training. F

421. Coordinating Techniques. 2 credits. Guidance, selection, and placing students in training stations: assisting in job adjustments; developing training agreements and placement plans; evaluation; follow-up; state reports; advisory committees; public relations; labor laws; program justifications; organization and supervision of cooperative programs. S

431. Career and Vocational Education of Special Needs Students. 3 credits. A study of the characteristics of the handicapped and disadvantaged. The employment opportunities, and career and vocational education to meet their needs. F

444. Philosophy of Vocational Education. 3 credits. Theory and practice of vocational education in secondary and post-secondary schools. Interrelationship of vocational education programs. Funding for vocational education programs. Relationship between general education and vocational education. S

450. Special Topics. 1-3 credits. Maximum of 6, varying with choice of topics. Topics will be selected on the basis of currency and relevancy to student needs. On demand.

460. Methods of Teaching Vocational Marketing Education. 2 credits. Prerequisite: BVED 303—General Methods. Focuses on planning and teaching marketing topics at either the high school or post-secondary level. S

470. Senior Seminar. 2 credits. Prerequisite: To be taken concurrently with or prior to student teaching. A discussion of problems, professional obligations, and careers in teaching business courses. S-U grading. F

481. Internship in Business and Vocational 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

Chemical Engineering (ChE)

T. Owens (Chair), Erjavec, Hasan, Newell, and Sterenberg

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 the chemical process and related industries. Research and professional activities by members of the faculty, conducted in collaboration with graduate and undergraduate students, contribute to the education of students and the professional growth of faculty.

Graduates from the program are well qualified to practice the profession of chemical engineering in a broad spectrum of industries including biotechnology, chemicals, 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. For graduates interested in obtaining advanced degrees in chemical engineering, the program provides a thorough grounding in fundamentals. In addition, the prescribed curriculum provides a sound, technically based general education for those graduates who pursue other professional interests, such as medicine, law and business.
### School of Engineering and Mines

#### B.S. IN CHEMICAL ENGINEERING

Required 136 hours, including:

1. **General Education Requirements**, see pages 27-30.
2. **The Following Curricular:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>ChE 102</td>
<td>Introduction to Chemical Engineering</td>
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<tr>
<td>Chem 151</td>
<td>Fundamental Concepts of Chemistry</td>
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</tr>
<tr>
<td>Chem 153</td>
<td>Analytical Chemistry</td>
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</tr>
<tr>
<td>Chem 161</td>
<td>Quantitative Analysis Laboratory</td>
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</tr>
<tr>
<td>Chem 162</td>
<td>Qualitative Analysis Laboratory</td>
<td></td>
</tr>
<tr>
<td>Engr 101</td>
<td>Introduction to Engineering and Design</td>
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<tr>
<td>Engr 201</td>
<td>Fundamentals of Computer Programming</td>
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<tr>
<td>Math 211</td>
<td>Calculus I</td>
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<tr>
<td>Math 212</td>
<td>Calculus II</td>
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</tr>
<tr>
<td>Phys 205</td>
<td>General Physics I</td>
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</tr>
<tr>
<td>Soc 120</td>
<td>Social Science (GER)</td>
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</tr>
<tr>
<td>ChE 201</td>
<td>Stoichiometry</td>
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<td>ChE 232</td>
<td>ChE Laboratory I</td>
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<tr>
<td>Chem 351</td>
<td>Organic Chemistry</td>
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<td>Chem 352</td>
<td>Organic Chemistry II</td>
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<td>CE 300</td>
<td>Analytical Mechanics (Statics)</td>
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<td>Eng 209</td>
<td>Technical and Business Writing</td>
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<tr>
<td>Math 213</td>
<td>Calculus III</td>
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<tr>
<td>Math 351</td>
<td>Elem. Differential Equations</td>
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<tr>
<td>Phys 206</td>
<td>General Physics II</td>
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<td>Engl 301</td>
<td>Technical and Business Writing</td>
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<td>Engl 302</td>
<td>ChE Laboratory II</td>
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<td>ChE 331</td>
<td>Chemical Engineering Thermodynamics</td>
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<tr>
<td>ChE 431</td>
<td>Chemical Engineering Reactor Design</td>
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<td>ChE 421</td>
<td>Chemical Engineering Plant Design</td>
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<td>ChE 408</td>
<td>Chemical Process Dynamics</td>
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<td>ChE 412</td>
<td>ChE Plant Design</td>
<td></td>
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<tr>
<td>ChE 413</td>
<td>ChE Reactor Design</td>
<td></td>
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<tr>
<td>Eng 460</td>
<td>Engineering Economy</td>
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<td>Soc 370</td>
<td>Sociology (GER)</td>
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<td>Phil 370</td>
<td>Ethics in Engineering</td>
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<td><em>Technical Elective I</em></td>
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<td>Senior Year</td>
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<td>ChE 405</td>
<td>Mass Transfer Operations</td>
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<td>ChE 408</td>
<td>Chemical Process Dynamics</td>
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<td>ChE 412</td>
<td>ChE Plant Design</td>
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<td>ChE 421</td>
<td>ChE Reactor Design</td>
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<tr>
<td>ChE 431</td>
<td>ChE Laboratory IV</td>
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<tr>
<td>Eng 460</td>
<td>Engineering Economy</td>
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<tr>
<td>Arts and Humanities (GER)</td>
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<tr>
<td>Communications (GER)</td>
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<td><em>Chemical Engineering Elective</em></td>
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<tr>
<td><em>Technical Elective II</em></td>
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</table>

**Freshman Year**

- **First Semester**
- **Second Semester**

**Sophomore Year**

- **First Semester**
- **Second Semester**

**Junior Year**

- **First Semester**
- **Second Semester**

**Senior Year**

- **First Semester**
- **Second Semester**

*Lists of courses that satisfy the requirements for the various electives are available in the department office.*

**Some of the following courses may be waived by completing Engr 100 and ChE 101.**

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### Chemistry

**Chemistry (Chem)**

H. Abramson (Chair), Ballentine, Borgerding, Hoffmann, Kozlak, Mallik, Pierce, Smoliakova, Stahl, Thomasson, Tilotta, and Woolsey

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 certifica-

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**Courses**

102. **Introduction to Chemical Engineering**, 2 credits. An introduction to the chemical engineering profession. Also includes introduction to dimension analysis, material balances, unit operations, safety and engineering economics. S

201. **Stoichiometry**, 3 credits. Prerequisite: Chem 106® or 152®. Introductory principles of stoichiometry with emphasis directed to material and energy balances involved in chemical processes. F

232. **Chemical Engineering Laboratory II**, 2 credits. Prerequisite: ChE 201 or concurrent enrollment. The use and application of apparatus to measure the physical and chemical properties involved in chemical process material and energy balances. S
tion. 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 hours, including:

I. General Education Requirements, see pages 27-30.

II. The Following Curriculum:

Major Requirements — 43 hours including:

**FRESHMAN YEAR**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Engl 101</td>
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<td>Math 211</td>
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<tr>
<td>Math 212</td>
<td>4</td>
</tr>
<tr>
<td>Chem 151</td>
<td>4</td>
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</tbody>
</table>

Total Hours: 16 15

OR

Phys 105, 205 

Engl 209

Math 211

Math 212

Social Science Elective

Total Hours: 16 15

**SOPHOMORE YEAR**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Chem 209</td>
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<td>Chem 305, 306</td>
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<td>Math 213</td>
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<td>Math 212</td>
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<td>Chem 351</td>
<td>5</td>
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<td>Chem 362</td>
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<td>Phys 205, 206</td>
<td>4</td>
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<tr>
<td>Humanities or Social Science Elective</td>
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</table>

Total Hours: 16 15

OR

Chem 209

Math 213

Math 212

Humanities or Social Science Elective

Total Hours: 16 15

**JUNIOR YEAR**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Chem 345</td>
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<td>Chem 451</td>
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<tr>
<td>Chem 461</td>
<td>5</td>
</tr>
<tr>
<td>Chem 462</td>
<td>2</td>
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<td>-Electives</td>
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Total Hours: 16 16

**SENIOR YEAR**

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<th>Course</th>
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<tr>
<td>Chem 453</td>
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<tr>
<td>Chem 490</td>
<td>3</td>
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<tr>
<td>Electives</td>
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</table>

Total Hours: 16 15

B.S. WITH MAJOR IN CHEMISTRY

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. The Following Curriculum:

Major Requirements — 33 hours including:

**FRESHMAN YEAR**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Chem 151</td>
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<tr>
<td>Chem 153</td>
<td>3</td>
</tr>
<tr>
<td>Chem 171</td>
<td>3</td>
</tr>
<tr>
<td>Engl 101</td>
<td>3</td>
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<tr>
<td>Engl 209</td>
<td>3</td>
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<tr>
<td>Math 211, 212</td>
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<tr>
<td>Math 212</td>
<td>4</td>
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<tr>
<td>Chem 305, 306</td>
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</table>

Total Hours: 16 15

**SOPHOMORE YEAR**

<table>
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<th>Credits</th>
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<tbody>
<tr>
<td>Chem 233</td>
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<td>Chem 351</td>
<td>5</td>
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<tr>
<td>Chem 362</td>
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<td>Phys 205, 206</td>
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Total Hours: 16 15

OR

Chem 209

Math 213

Math 212

Humanities or Social Science Elective

Total Hours: 16 15

**JUNIOR YEAR**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Chem 450</td>
<td>3</td>
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<td>Chem 461</td>
<td>5</td>
</tr>
<tr>
<td>Chem 462</td>
<td>2</td>
</tr>
<tr>
<td>German, French, or Russian</td>
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<tr>
<td>Electives</td>
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</table>

Total Hours: 16 16

**SENIOR YEAR**

<table>
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<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Electives</td>
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</table>

Total Hours: 16 15

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 212 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.

1With permission of the advisor, a student may substitute English 102 if English 209 is not available.
2If a student is not ready for Math 211, the math sequence may be moved back one semester and Math 105 (also Math 103, if needed) should be taken in the first semester.
3To fulfill the University Graduation Requirements, a minimum of 6 credit hours in Arts and Humanities (in addition to languages) and 9 credit hours in Social Sciences must be taken (see pp. 27-30 of this catalog).

Suggested electives are courses in Physics, Mathematics, Biochemistry, Biology, Languages, Computer Science, Chemical Engineering, Business Management, and Speech.

If Chem 171 was completed then Chem 235 should be taken. If Chem 171 was not completed then Chem 209 should be taken.

Graduate level courses in Chemistry may be taken as electives.
Teacher Certification

In addition to fulfilling the requirements of one of the majors listed above, students seeking secondary teacher certification in Chemistry must complete the Department of Teaching and Learning requirements in Secondary Education on page 148. Students seeking secondary certification must also complete these additional courses:

- BCH 301 Biochemistry Lecture (3)
- Bio 101, 102 Introduction to Biology (6)
- Bio 101L, 102L Introduction to Biology Lab (2)
- Geol 101, 101L Introduction to Geology (4)
- Geog 121, 121L Physical Geography (4)

Chemistry majors seeking secondary certification must have an advisor 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 200 (see pg. 44).

Courses

101. Fundamentals of Our Chemical World. 4 credits. Prerequisites: none. A course designed specifically for non-science majors 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. Students receiving credit in Chem 101 may not take Chem 104, 105, or 151 for credit. F, S

104. Introductory Chemistry. 4 credits. Prerequisite: none. Introduction to inorganic chemistry. Includes laboratory. Students receiving credit in Chem 104 may not take Chem 151 for credit. F, S

105. General Chemistry I. 4 credits. Prerequisite: Math 102 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; chemical elements and their compounds. Atomic and molecular structure, periodicity, stoichiometry, states of matter, solutions, reactions in solutions. Includes one three hour laboratory per week. Students receiving credit in Chem 105 may not take Chem 151 for credit. F, S, SS

106. General Chemistry II and Qualitative Analysis. 4 credits. Prerequisite: Chem 105. Satisfies all requirements of Qualitative Analysis. Elementary principles and theories of chemistry; chemical elements and their compounds. Includes one three hour laboratory per week. Students receiving credit in Chem 106 may not take Chem 152 for credit. F, S, SS

107. Introduction to Organic and Biochemistry. 4 credits. Prerequisite: Chem 104 or 105. An alternate to Chem 106. May not take both. Does not satisfy the prerequisite for any advanced chemistry course. A second semester of General Chemistry with an emphasis on organic and biochemistry. Includes laboratory. Especially for students who wish to include organic and biochemistry in the first year. F, S

151. Fundamental Concepts of Chemistry. 3 credits. Prerequisites: one year high school chemistry and Math 102 or an appropriate score in Mathematics Testing Program (PTP). Recommended for chemistry majors and chemical engineers. Atomic and molecular structure, periodicity, stoichiometry, states of matter, solutions, reactions in solutions and equilibria. F, S, SS

153. Analytical Chemistry. 3 credits. Prerequisites: Chemistry 151 or 105. Recommended for chemistry majors and chemical engineering majors. Principles and applications of chemical stoichiometry, equilibrium, and spectroscopy to modern chemical analysis. S

171. Fundamentals of Chemistry Laboratory. 1 credit. Prerequisite: One year high school chemistry, one year high school algebra. Corequisite: Chem 151. Recommended for chemistry majors and chemical engineers. This is the accompanying laboratory for Chem 151. A variety of chemical techniques will be covered to demonstrate fundamental chemical concepts. F

173. Introduction to Chemical Analysis. 1 credit. Prerequisite: Chem 171. Corequisite: Chem 153. Recommended for chemistry majors and chemical engineers. An introduction to various methods of analytical chemistry including volumetric analysis, gravimetric analysis, and statistical analysis. S

209. Quantitative Analysis. 4 credits. Prerequisite: Chem 106. For all science majors interested in using analytical chemistry techniques in a science laboratory. Principles and applications of gravimetric, volumetric, and spectrophotometric absorption analyses are included. Includes laboratory F

212. Organic Chemistry. 5 credits. Prerequisite: Chem 106. Intended to meet the minimum requirements for students preparing for medical technology and for natural science majors. Includes laboratory. Students receiving credit in Chem 212 may not take Chem 305 for credit. S, SS

253. Inorganic Chemistry. 2 credits. Prerequisites: Chemistry 153. Required for chemistry majors and other science majors with emphasis on occurrence, preparation, physical properties, chemical reactivity, uses, nomenclature, structure, and periodic behavior. Includes chemical kinetics and thermodynamics. S

305, 306. Organic Chemistry. 10 credits. Prerequisite: Chem 106 with a grade of C or better or permission of the Chemistry Department. Designed for preprofessional preparation of students other than chemistry majors. Organic chemistry is discussed in terms of modern theory. Includes laboratory. 305F, 306S

337. 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 351, 352 and 362 or Chem 305, 306. S/U grading.

351. Organic Chemistry I. 5 credits. Prerequisites: Chem 153 & 162. Recommended for chemistry majors. Descriptive and mechanistic chemistry of carbon containing compounds; their occurrence, properties, nomenclature, stereochemistry, structure, synthesis and reactions. Includes laboratory. F

352. Organic Chemistry II. 3 credits. Prerequisites: Chem 351. Recommended for chemistry majors. Descriptive and mechanistic chemistry of functionalized derivatives of carbon containing compounds including biologically significant compounds. S

362. Organic Chemistry Laboratory II. 2 credits. Prerequisite: Chem 351. Recommended for chemistry majors. The synthesis of organic compounds including the qualitative and instrumental characterization of selected compounds. S

385. Introduction to Research. 1 credit. Prerequisites: Chem 253 and 362, or Chem 209 and 306. Introduction to the chemical literature, to computer searching of the literature and to prudent laboratory practices, including safety and waste disposal. S

390. 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, S

431. Selected Topics in Chemistry. 1-3 credits, repeatable with different topics. On demand.

450. Physical Chemistry I. 3 credits. Prerequisites: Chem 253, 306 or 352, Math 213 & Phys 206. Required for chemistry majors. The use of energy concepts in studying and understanding the nature of matter, equilibrium, solubility, reactivity, criteria for reactions. F

451. Physical Chemistry II. 3 credits. Prerequisite: Chem 450. Theory and nature of bonding and structure; chemical kinetics, and theory of reactions as applied to both inorganic and organic systems. S

454. Inorganic Chemistry II. 3 credits. Prerequisite: Chem 451. Chemistry of inorganic compounds in terms of modern theories and concepts. F

455. Spectroscopy and Structure. 3 credits. Prerequisite: Chem 451. Applications of spectroscopic techniques to the determination of molecular structure. F

461. Instrumental Analysis. 5 credits. Prerequisite: Chem 253 or 209. Required for chemistry majors. Applications of physical chemical principles via instrumental techniques to problems of quantitative and qualitative analysis. Includes laboratory. F

462. Physical Chemistry Laboratory. 2 credits. Prerequisites: Chem 461 and 450. Corequisite: Chem 451. Required for chemistry majors. The solution of chemical problems in the laboratory using modern physical and analytical methods. S

463. Advanced Synthesis Laboratory. 3 credits. Prerequisites: Chem 462 and 455. Advanced synthetic, preparatory and characterization methods currently used in modern laboratory practice will be studied. S

490. Senior Research. 2-6 credits. Prerequisites: Chem 451 and 462. May be repeated up to 6 credits. Total credits not to exceed 6. F, S, SS

Civil Engineering

R. Apanian (Chair), Gullicks, Jerath, Mason, Moretti, Phillips, and Richard

The Civil Engineering curriculum includes a core of chemistry, physics, mathematics, and engineering science, followed by intensive design-oriented courses in environmental and water resources engineering, soils and structural engineering, and transportation engineering. The mission of the Civil Engineering program at the University of North Dakota is to provide students with a well-rounded civil engineering education. The program goals are to: 1) develop students as professional engineers capable of contributing multi-disciplinary solutions to complex problems; 2) prepare graduates for continuing professional development and advanced level education; and 3) promote ethical, competent, and licensed practice of civil engineering. The department desires its graduates to possess engineering, environmental, social, communication, and economic expertise for an expanding role in the sustainable-growth future of society.

School of Engineering and Mines

B.S. IN CIVIL ENGINEERING

Required 139 hours, including:

1. General Education Requirements, see pages 27-30.
II. The Following Curriculum:

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
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<tbody>
<tr>
<td>Chem 105</td>
<td>General Chemistry</td>
<td>(4)</td>
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<tr>
<td>Chem 106</td>
<td>General Chemistry</td>
<td>(4)</td>
</tr>
<tr>
<td>Engl 101</td>
<td>Composition I</td>
<td>(3)</td>
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<tr>
<td>Engr 101</td>
<td>Introduction to Engineering and Design</td>
<td>(2)</td>
</tr>
<tr>
<td>Engr 102</td>
<td>Descriptive Geometry</td>
<td>(2)</td>
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<tr>
<td>Engr 201</td>
<td>Computer Applications in Engineering</td>
<td>(2)</td>
</tr>
<tr>
<td>Math 211, 212</td>
<td>Calculus I &amp; II</td>
<td>(4)</td>
</tr>
<tr>
<td>Phys 205</td>
<td>General Physics I</td>
<td>(4)</td>
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<td></td>
<td>Arts and Humanities (See page 28)</td>
<td>(3)</td>
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<td></td>
<td><strong>Sophomore Year</strong></td>
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<tr>
<td>CE 300</td>
<td>Analytical Mechanics (Statics)</td>
<td>(2)</td>
</tr>
<tr>
<td>CE 313</td>
<td>General Surveying</td>
<td>(3)</td>
</tr>
<tr>
<td>CE 314</td>
<td>Route Surveying</td>
<td>(2)</td>
</tr>
<tr>
<td>Econ 201</td>
<td>Principles of Macroeconomics</td>
<td>(3)</td>
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<tr>
<td>EE 206</td>
<td>Electrical Engineering</td>
<td>(3)</td>
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<tr>
<td>Engl 209</td>
<td>Technical &amp; Business Writing</td>
<td>(3)</td>
</tr>
<tr>
<td>Geol 203</td>
<td>Geology for Engineers</td>
<td>(3)</td>
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<tr>
<td>Math 213</td>
<td>Calculus III</td>
<td>(4)</td>
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<tr>
<td>Math 351</td>
<td>Elementary Differential Equations</td>
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<td>Phys 206</td>
<td>General Physics II</td>
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<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>CE 305</td>
<td>Analytical Mechanics (Dynamics)</td>
<td>(3)</td>
</tr>
<tr>
<td>CE 351</td>
<td>Structural Mechanics I</td>
<td>(3)</td>
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<tr>
<td>CE 303</td>
<td>Civil Engineering Lab</td>
<td>(3)</td>
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<tr>
<td>CE 352</td>
<td>Structural Mechanics II</td>
<td>(4)</td>
</tr>
<tr>
<td>CE 412</td>
<td>Soil Mechanics</td>
<td>(3)</td>
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<td>CE 431</td>
<td>Environmental Engineering I</td>
<td>(3)</td>
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<tr>
<td>CE 423</td>
<td>Hydraulic Engineering</td>
<td>(3)</td>
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<tr>
<td>CE or ME 306</td>
<td>Fluid Mechanics</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 352</td>
<td>Advanced Engineering Mathematics I</td>
<td>(3)</td>
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<tr>
<td></td>
<td>Arts and Humanities (See page 28)</td>
<td>(3)</td>
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<td></td>
<td>Social Science (See page 28)</td>
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<th>First Semester</th>
<th>Second Semester</th>
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<tr>
<td>CE 413</td>
<td>Soil Mechanics Lab I</td>
<td>(2)</td>
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<tr>
<td>CE 416</td>
<td>Transportation Engineering</td>
<td>(3)</td>
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<tr>
<td>CE 432</td>
<td>Environmental Engineering II</td>
<td>(3)</td>
</tr>
<tr>
<td>CE 451</td>
<td>Structural Design I</td>
<td>(3)</td>
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<tr>
<td>CE 453</td>
<td>Reinforced Concrete</td>
<td>(4)</td>
</tr>
<tr>
<td>CE 482</td>
<td>Civil Engineering Design</td>
<td>(2)</td>
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<tr>
<td>CE 483</td>
<td>Civil Engineering Design</td>
<td>(2)</td>
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<tr>
<td>CE</td>
<td>Elective</td>
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<tr>
<td>EM 460</td>
<td>Engineering Economy</td>
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<tr>
<td>Phi 370</td>
<td>M Q &amp; P Ethics in Engineering</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 341</td>
<td>Thermodynamics</td>
<td>(3)</td>
</tr>
<tr>
<td>Sci</td>
<td>Social Sciences (See page 28)</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Courses


301. Mechanics of Materials I. 3 credits. Prerequisite: CE 300. Simple stress and strain, shear and bending moment, flexural and shear stresses in beams, combined stresses, deflection of beams, statically indeterminate members and columns. F S

302. Civil Engineering Laboratory. 3 credits. Prerequisite: CE 301. Engineering properties of materials; A.S.T.M. testing of asphaltic and Portland cement concretes, ceramic products, metals, woods, and other materials; electrical strain measurement. F S

305. Analytical Mechanics (Dynamics). 3 credits. Prerequisite: CE 300. Principles of dynamics, rectilinear and curvilinear translation, rotation, plane motion, work and energy, impulse and momentum. F S

306. Fluid Mechanics. 3 credits. Prerequisite: Physics 205, Math 213. 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

313. General Surveying. 4 credits. Prerequisite: Math 211. Measurements of distance and angles; instrument adjustment; stadia and plane table mapping; triangulation; differential leveling; azimuth by solar observation; horizontal and vertical curves; traverse surveys; calculations; state plane coordinate systems; U.S. public land surveys; earthwork. F

314. Route Surveying. 2 credits. Prerequisite: CE 313. Route location; horizontal curves, compound, and reverse; vertical curves, spiral curves, earthwork; principles of construction layout and route location design; aerial photography in route surveying. S

317. Cooperative Education. 1-9 credits repeatable to 24. Prerequisite: Admission to the civil 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. FSS

351. Structural Mechanics I. 3 credits. Prerequisite: CE 301. Reactions, shear and bending moment, trusses, graphic statics, influence lines, bridge and roof trusses, long-span structures, three dimensional framework, cables and approximate analysis. F S

352. Structural Mechanics II. 4 credits. Prerequisite: CE 351. Moment areas, elastic loads, virtual work, Castiglione’s law, superposition equations, slope-deflection method and moment distribution. S

412. Soil Mechanics. 3 credits. Prerequisite: GeoL 203 and CE 301. Soil characteristics, steady-state and transient water flow in soil, soil deformation, conditions at failure, cohesionless and cohesive soils and plastic-equilibrium states in soil. S

413. Soil Mechanics Laboratory. 2 credits. Prerequisite: CE 412. Visual identification and classification, index properties, moisture density relations, consolidation, permeability, shear strength, and soil stability. S

414. Foundation Engineering. 3 credits. Prerequisite: CE 412. Lateral earth pressure, retaining structures, soil exploration and sampling, bearing capacity, spread footings, combined footings, mat foundations, settlement analysis, drilled shaft and pile foundations, stability of slopes. Once a year.

416. Transportation Engineering. 3 credits. Prerequisite: CE 314 and CE 412. Transportation systems; urban transportation planning; design of land, air and water transportation facilities; and future developments in transportation. S


423. Hydraulic Engineering. 3 credits. Prerequisite: CE 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 machines. F

431. Environmental Engineering I. 3 credits. Prerequisite: ME 306. Environmental quality, water quality modeling, water & wastewater treatment systems, sludge processing, solid wastes, hazardous wastes, environmental law. S

432. Environmental Engineering II. 3 credits. Prerequisite: ME 306. Water distribution networks, mass curve analysis, wastewater collection systems, pumping systems for water and wastewater, system design project, computer-assisted design. F

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. Prerequisite: Consent of instructor. Engineering contracts, specification essentials, approved methods of handling construction projects, trade practices, worker’s compensation acts, power and duties of engineering executive. F/S

451. Structural Design I. 3 credits. Prerequisite: CE 352. Selection of sections, riveted and welded connections, plate girders, trusses, bearings, light gage structural members, fatigue of structural members and introduction to plastic design. F

452. Timber Engineering. 3 credits. Prerequisite: CE 351. Design of mechanical fastenings, beams, columns, trusses, bridge decks, glued laminated timber and plywood. On demand.

453. Reinforced Concrete. 4 credits. Prerequisite: CE 352. Materials and specifications, axially and eccentrically loaded columns, strength beam theory, shear stresses, retaining walls, one-way slabs, flat slabs and footings. S

452. Civil Engineering Design. 2 credits. Prerequisite: CE 352, 412, 423, and 431. Corequisites: CE 413, 432, and 451. This is a comprehensive design course which integrates the engineering design and engineering science components of previous and ongoing course work into a major design experience. Professional engineering ethics, professionalism, and public safety. Term paper on current engineering issues. Team design projects in the areas of environmental, geotechnical, structures, water resources, etc. May apply preliminary design reports and individual presentations. F

453. Civil Engineering Design. 2 credits. Prerequisite: CE 482. This is the second of a two course sequence in Civil Engineering design and is a continuation of CE 482. Design leads for buildings and other structures, codes for buildings and highways, and professional liability. Term paper on the current engineering issues. Continuation of team design projects from CE 482. Group final reports and individual presentation. 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
R. Sopher (Chair), A. W. Bruce (Program Director),
Coleman, Larson, Pau, and Torgerson

Clinical laboratory scientists or medical technologists are essential members of the health care team. A clinical laboratory scientist uses the latest biomedical instruments, often interfaced with computers, to perform and generate accurate, reliable laboratory tests. Results of the tests determine the presence of disease, aid in treatment, and monitor therapy. This is a dynamic profession that changes as new medical knowledge is discovered.

Careers in clinical laboratory science are many and varied. Employment opportunities exist in hospitals, private laboratories, physician offices, clinics, government agencies, industry, research, armed forces and other health related facilities. A current shortage of clinical laboratory scientists exists and the demand for new graduates is expected to rise in the next decade.

The University of North Dakota has offered a degree in clinical laboratory science (formerly medical technology) since 1949. The Clinical Laboratory Science Program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). Graduates of the program will be eligible to sit for several national certification examinations. In addition to certification, some states have specific requirements for licensure of clinical laboratory personnel which vary from state to state.

Clinical laboratory scientists attain their professional skills through a baccalaureate education with an emphasis in the sciences. The degree includes two years of pre-professional education followed by two years of professional coursework. Application for advancement to the professional education component must be made during the second semester of the sophomore year. Acceptance into the professional program is on a competitive basis with consideration given to science grades, general college preparation, and personal adjustment to the clinical laboratory science field. Once accepted, all students in the professional program must attain a letter grade of at least “C” in their major courses in order to continue in the program. No student will be allowed to complete the senior professional year unless he/she has received at least a grade of “C” in each of the major coursework classes. Exceptions for acceptance and continuance may be made by petition to the Program Director.

The professional education component includes lecture and laboratory courses that prepare the student to work in the profession. Coursework focuses on the clinical application and interpretation of testing, test management and utilization, laboratory operations, professionalism and quality assurance. In addition, students spend three months in a student laboratory and six-to-eight months in a hospital setting operating equipment, performing and managing testing activities, evaluating quality control and working with the health care team.

The amount of time spent in the hospital setting is determined by the clinical program the student selects. Hospitals currently affiliated with the Clinical Laboratory Science program are United Hospital and Grand Forks Clinic, Grand Forks, ND; St. Alexius Medical Center, Bismarck, ND; Presentation Medical Center, Rolla, ND; Hemepinic County Medical Center, Minneapolis, MN; St. Cloud Hospital, St. Cloud, MN; and Riverview Hospital, Crookston, MN. Some students opt to apply for other NAACLS approved programs. Students in these programs complete a twelve-month course of study at the hospital site after the junior year. Approved programs affiliated with UND include Trinity Medical Center, Minneapolis, MN; St. Cloud Hospital, St. Cloud, MN; and United Hospital and Grand Forks Clinic, Grand Forks, ND.

During the senior professional year students register for courses in the summer, fall and spring semesters. Students in the program must be aware that there are special requirements prior to contact with patients and to testing patient specimens. Students are required to have a physical and to be immunized with Hepatitis B vaccine. If a student elects not to be immunized they must sign a liability waiver. The student will also be responsible for travel, housing, food costs, and summer course fees in addition to the payment of regular tuition during the senior professional year.

Clinical Laboratory Technician (CLT) or Medical Laboratory Technician (MLT) graduates from a NAACLS or equivalent accredited MLT program are eligible for the transfer of up to 30 semester credits to the B.S. degree program. Transfer credits allow the waiver of several science courses in the preprofessional and professional curriculum. Each 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. Also the students may be eligible for a shortened professional program based on the previous coursework, years of experience working in a clinical laboratory, and competency assessment.

A Master of Science degree with a major in Medical Technology is also offered. The Master of Science Program is designed to prepare students for careers as administrative laboratory directors, clinical laboratory consultants, technical supervisors, or laboratory educators. The Master of Science degree is described in the graduate section of this catalog.

The Clinical Laboratory Science 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.

School of Medicine and Health Sciences

B.S. IN CLINICAL LABORATORY SCIENCE

Required 129 hours, including

I. General Education Requirements see pages 27-30.

II. Curriculum:

Freshman Year

FIRST SEMESTER
Engl 101 .................. Composition I .................................................(3)
Biol 101 ................ Introduction to Biology ........................................(3)
Biol 101L ............... Introduction to Biology Lab ................................(1)
Chem 105 ................ General Chemistry ............................................(4)
Mathematics .................. ................................................................(3)
Arts and Humanities Elective .........................................................(3)

SECOND SEMESTER
Med 100 ................. Introduction to Health Sciences Professions ..........(2)
Biol 102 ................. Introduction to Biology ........................................(3)
Eng 102 or 209 .......... Composition II/Technical Writing ..................(3)
Commm 161 ........ Fundamentals of Public Speaking ........................(3)
Chem 106 ............... Qualitative Analysis .............................................(4)

Sophomore Year

FIRST SEMESTER
Path 226 ................. Orientation to Medical Laboratory Sciences .......(2)
Comm 210 ............... Interpersonal Communications ...........................(3)
Pey 101 ................. Intro to Psychology ...............................................(3)
Soc 101 ................. Intro to Sociology ...............................................(3)
Anat 204 ................ Anatomy for Paramed ........................................(3)
Humanities Elective ...............................................................(3)

SECOND SEMESTER
Chem 212 ............... Organic Chemistry ............................................(5)
Econ 201 ............... Economics 1 ....................................................(3)
Path 234 ............... Human Parasitology ...........................................(1)
Path 234L ............... Human Parasitology Lab ..................................(1)
Path 238 ............... Computer & Statistical Applications in CLS ............(2)
Humanities Elective ...............................................................(3)

Professional Year 01 (Junior)

FIRST SEMESTER
Pey 301 ............... Human Physiology ...............................................(4)
Path 392 ............... Immunohematology/Immunology .........................(2)
Path 325 ................ Hematology ......................................................(3)
Path 325L ............... Hematology Laboratory ........................................(2)
Phil 122 ............... Philosophy/Ethics Elective ....................................(3)
Path 336 ............... Laboratory Calculations .......................................(1)

SECOND SEMESTER
BCh 301 ............... Biochemistry ......................................................(3)
BCh 303 ............... Biochemistry Lab ................................................(3)
Milbo 402 ............... Clinical Microbiology .........................................(4)
Mgmt 300 ............... Principles of Management ...................................(3)
Mgmt 305 ............... Managerial Concepts .........................................(3)
Path 380 ............... Professional Issues in CLS .....................................(1)
Courses (Path)

The School of Communication 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 90 semester credits outside the School. At least 65 of these credits must be in courses approved for the University’s general education requirements (see pages 27-30) or offered by the traditional liberal arts departments.

Facilities and Special Programs. The School has computerized writing and graphics laboratories, as well as its own reading room that houses a wide selection of daily and weekly newspapers and professional journals. The facilities of the Northern Lights Public Radio and the University’s Television Production Center are 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, the University’s radio stations, 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. Other programs sponsored by the School include the Northern Interscholastic Press Association, which serves high school journalism programs in North Dakota and northern Minnesota, and the UND High School Invitational Speech Tournament.

**Admission Requirements.** Admission to the College of Fine Arts and Communication does not automatically carry admission to the School of Communication. Students planning to pursue a major or minor through the School must formally apply for admission to major or minor status. This is usually done during the sophomore year. To be admitted, students must:

- Complete Comm 102 or 103 and Engl 101 with grades of C or better.
- Pass an English Proficiency Test administered by the School.
- Have a 2.50 overall grade point average.
- Have earned at least 24 semester credits.
- Apply for admitted major or minor status in the School.

Students are classified as Pre-Communication majors until they have completed these requirements. Additional information about the application process is available from the School.

Note: Pre-majors and majors must earn a grade of C or better in all courses taken to fulfill requirements toward the major and minor, and they must maintain an overall grade point average of 2.50 in order to be enrolled in any Communication course beyond Comm 102 and 103.

**College of Fine Arts and Communication**

**B.A. WITH MAJOR IN COMMUNICATION**

Required 125 hours for graduation, including:

I. General Education Requirements, see pages 27-30. (Note: Communication Pre-majors, majors, and minors cannot count Communication courses toward these requirements.)

II. Liberal Arts Courses

Students must complete 90 hours of courses outside of the School, 65 of which must be in the following liberal arts areas: 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, Visual Arts, and Women Studies.

III. One of the following options:

A. Level IV proficiency in a second language (which requires completion of the courses numbered 202 in the student’s chosen language); OR

B. 20 additional credits (beyond the General Education Requirements) from two of the following areas: Arts and Humanities; Social Sciences; Mathematics, Science and Technology (12 of these credits must be in upper division courses.)

IV. Major Requirements

Required minimum of 35, maximum of 38 credits, including:

- **Level A: 6 credits required**
  - Comm 102 Communication and the Human Community (.3)
  - Comm 103 Information Technology and Social Change (.3)

- **Level B: 15-18 credits required, minimum of one course per category**
  - **COMMUNITY**
    - Comm 161 Fundamentals of Public Speaking (.3)
    - Comm 201 Visual Communication (.3)
    - Comm 210 Introduction to Interpersonal Communication (.3)
    - Comm 303 Principles of Public Relations (.3)
    - Comm 341 Advertising Creative Strategy (.3)
    - Comm 365 Small Group Discussion and Conference (.3)

- **TECHNOLOGY**
  - Comm 204 Graphic Design (.3)
  - Comm 226 Photo Imaging (.3)
  - Comm 304 Electronic Editing (.3)
  - Comm 305 Publications (.3)
  - Comm 306 Advertising Media Planning (.3)
  - Comm 307 Videography (.3)
  - Comm 332 Fundamentals of Television Production (.3)

- **Level C: 13-15 credits required, minimum of one course per category**
  - **COMMUNITY**
    - Comm 300 Communication and Society (.3)
    - Comm 301 Psychology of Communication (.3)
    - Comm 310 Communication 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 490 Special Topics (.3)

- **TECHNOLOGY**
  - 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 Media History (.3)
  - Comm 490 Special Topics (.3)

- **Level D: 1-3 credits required; Pre-Reqs Level B or instructor consent**
  - Comm 337 Cooperative Education (.3)
  - Comm 399 Practicum (.3)
  - Comm 401 Individual Projects, Readings (.3)
  - Comm 455 Internship (.3)

**MINOR IN COMMUNICATION**

Required 24 credits:

- 6 credits in Level A (Comm 102 and 103)
- 9 credits of courses in Level B
- 9 credits of courses in Level C
- Additional pre-requisites may apply to some courses. Check individual course descriptions.

**MINOR IN COMMUNICATION**

Required 24 credits, including:

- Comm 102 Communication in the Human Community (.3)
- Comm 161 Fundamentals of Public Speaking (.3)
- Comm 200 Writing for the Media (.3)
- Choose one 3-credit course from:
  - Comm 300 Communication and Society (.3)
  - Comm 310 Communication and Diversity (.3)
  - Comm 412 Communication Law (.3)
  - Comm 428 Media History (.3)
  - Comm 461 Political Communication (.3)
- Other Requirements (12 credits):
  - Comm 210 Introduction to Interpersonal Communication (.3)
  - Comm 361 Persuasion (.3)
  - Comm 365 Small Group Discussion (.3)
  - Comm 402 Intercultural/International Communication (.3)
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

161. Fundamentals of Public Speaking, 3 credits. Basic principles of speech from the viewpoint of composition and delivery. Emphasis on student performance stressing original thinking, effective organization and direct communication of ideas. F,S

200. Writing for the Media, 3 credits. Prerequisites: Admitted 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 the visual components of communication, particularly the graphics of news and advertising, photography and television. F


204. Graphic Design, 3 credits. 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. Typographic corporate symbolism, logotypes 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 professionals. F,S

210. Introduction to Interpersonal Communication, 3 credits. To acquaint the student with fundamental concepts related to communication between individuals. To give insights into the dynamics of interpersonal communication. To aid in understanding how people present themselves to other people, and how others perceive them in return. F,S

221. Reporting, 3 credits. Prerequisite: Admitted major. Introduction to news gathering, judgment and writing. F

226. Photo Imaging, 3 credits. Introduction to the practice of photography. Film development, printing, making, photographic composition. Emphasis on the purposes of photography. F

300. Communication and Society, 3 credits. Prerequisites: Comm 102 or 103 or instructor consent. Explores the interrelationships of society and forms of communication. Objectives include developing knowledge of the media, an ability to discuss in an informed manner the issues of communication in a democratic society and to develop an awareness of the role of media in the public interest. F,S

301. Psychology of Communication, 3 credits. Prerequisite: Comm 102 or 103 or instructor consent. Analysis of the nature and function of communication in interpersonal relationships, special consideration of recurring patterns of communication behavior and the relations among personal characteristics and communications. S

302. Popular Culture, 3 credits. Prerequisite: Comm 102 or 103 or instructor consent. Analysis of the nature and function of communication in interpersonal relationships, special consideration of recurring patterns of communication behavior and the relations among personal characteristics and communications. S

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. F

304. Electronic Editing, 3 credits. Introduction to the concepts, theories and practice of electronic editing. Topics include aesthetics, composition, lighting, use of color, connecting action, manipulating time, use of sound and types of editing schemas. Past, current and new editing technology and techniques will be discussed. Consideration of social impact and the ethical, cultural, legal and regulatory issues involved in editing. S

305. Publications, 3 credits. Prerequisite: Comm 204. An overview of the print production process, including typesetting, distribution, desktop publishing, conceptualization, design and production, budgeting, pre-press and printing processes. F

306. Advertising Media Planning, 3 credits. Prerequisite: Comm 341. An introduction to the complexities of buying space and time for advertising clients. Includes buyer analysis for advertising clients. Includes devising and using effective advertising objectives, strategies and tactics; appropriation of advertising budgets and the effective allocation of budgets to various media; the use of secondary data for target-audience cost efficiency, reach and frequency analysis. Developing advertising strategies and tactics to reach culturally diverse audiences and how this affects media buying. S

307. Videography, 3 credits. Introduction to the concepts, theories and practice of electronic videography. Includes use of cameras to obtain images, aesthetics of videography, composition and lighting. Discussion of past, current and new video imaging technology and techniques. Includes the study of dramatic, documentary, and experimental video. Consideration of the social impact and ethical, cultural, legal and regulatory issues involved in producing images. S

308. Argumentation, 3 credits. Prerequisite: Comm 102 or Comm 103 or instructor consent. An introduction to the philosophical development of argument, basic components of argumentation, kinds of argument structures and practical application of argumentation. F

310. Communication and Diversity, 3 credits. Prerequisites: Comm 102 or 103, or instructor’s consent. Study of minority status within mass media organizations and in media content from historical, contemporary and speculative points of view. S

311. Advanced Journalistic Writing, 3 credits. Prerequisites: Comm 221 or 202; admitted major. News coverage and writing techniques involving public and private sectors of contemporary society. S

321. Editing, 3 credits. Prerequisites: Comm 221 or 202; admitted major. Editing and headline writing, copy preparation and layout applicable to newspapers and other print media. S

328. Community Journalism, 3 credits. Prerequisite: Comm 202 or Comm 103 or instructor consent. Considers the role that news media can play in enhancing community life. May focus on the role of print and broadcast journalism in Native American communities. On the role of weekly newspapers in rural towns of the United States and print media in cities. Provides an in-depth introduction to an assessment of efforts to determine how new forms of news media could provide innovative service for communities. F,S

329. Practicum, 1-3 credits, repeatable to 8 credits. Prerequisite: Level B or instructor consent. Supervised and graded experience offered in a variety of communication contexts, including, but not limited to: studios, on-air radio, Native Directions and communication campaigns. Experienced offered will vary. F,S

331. Survey of Broadcasting, 3 credits. Prerequisite: Comm 102 or 103 or instructor consent. Examination of broadcasting with emphasis on technology, structure, and organization. Study will include the basic legal, social and artistic aspects of broadcasting as well as techniques and utilization of audience research. S

332. Fundamentals of Television Production, 3 credits. Introduction to basic studio production. Emphasis on the function and operation of TV equipment, lighting, producing and directing, including crew management, program conception, writing, planning and evaluation. F

337. Cooperative Education, 1-3 credits, repeatable to a total of 3 credits in Cooperative Education, Internship, or a combination of both. A practical work experience with an employer closely associated with the student’s academic area. Arranged by mutual agreement among student, department, and employer. SU grading only. F,S,SS

341. Advertising Creative Strategy, 3 credits. Prerequisites: Comm 204. Introduces students to ideas and their translation into words and images that inform and persuade. Emphasis is on strategic approaches to creative decision-making across all media. Topics include the setting of objectives, selection of copy structure, demands of different media, design principles, layout and story boards, and regulations affecting messages. F

352. Writing for Public Relations, 3 credits. Prerequisites: Admitted major. Intensive practice in preparing the most common types of materials used in public relations. Special emphasis on writing style and form, and effective media relations. S

361. Persuasion, 3 credits. Prerequisite: Comm 102 or 103 or instructor consent. Development of skills in constructing effective arguments. Theoretical and practical issues involved in the process of argumentation and the influence of 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, books, newspapers and the internet. F

365. Small Group Discussion and Conference, 3 credits. A theory and performance course in which students learn discussion techniques and study small group communication in networks, roles and worknorms in task oriented and problem solving projects. S

366. Business and Professional Speaking, 3 credits. Prerequisite: Admitted major. Advanced study of rhetorical invention, disposition and style, and the application of those principles through preparation of business and professional speeches and speech manuscripts. F

367. Classical and Modern Criticism, 3 credits. Prerequisite: 102 or 103 or instructor consent. A study of the ancient to contemporary development of rhetorical principles in practice and public speaking and communication. F

391. Individual Projects and Readings, 1-3 credits (May be repeated up to 6 credits). Prerequisite: Undergraduate junior standing, advisor consent. Independent projects or directed study related to topics, issues or activities in the areas of journalism, speech or communication. S

401. Organizational Communication, 3 credits. Prerequisite: Comm 102 or 103 or instructor consent. Examination of communication behavior in formally structured relationships as it relates to the organization and to individuals. Special attention given to organizational style, status, trust and conflict-management. Informal communication networks and rumor mongering are studied. F,S

402. International/Intercultural Communication, 3 credits. Prerequisite: Comm 102 or 103 or instructor consent. A study of how language and culture affect communication patterns and outcomes. F

403. Community Relations, 3 credits. Prerequisites: Comm 202 or Comm 103 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

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Communication Sciences and Disorders

(CSD)

W. Swisher (Chair), Biberdorf, Fire, Glick, Hess, Madden, Schill, and Wagner

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 hearing aid evaluation). Referrals to the Clinic may be made by anyone, and treatment is provided for individuals of all ages.

Majors

The undergraduate major in Communication Sciences and Disorders is a pre-professional degree. Graduates of this pre-professional program are qualified for employment in this field only after additional study on the graduate level. Academic and practicum requirements for certification by the American Speech-Language-Hearing Association are completed during graduate study.

To enroll in courses other than CSD 231, 232, and 235, students majoring in Communication Disorders must have achieved a 2.50 GPA overall and a C or better in their major courses after having completed at least 60 credit hours.

Limitations of staff, client population, facilities and practice teaching sites may make it necessary to limit the number of students accepted for clinical training. Undergraduate students will apply for admission to their first registration for clinical practice, which will typically begin the first semester of their junior year. Students should apply before the end of the preceding semester. If there are more applicants than available positions, the faculty will admit students selectively based on the information furnished in the application, including grade point average and grades in Communication Sciences and Disorders courses taken to that date. Students who are not admitted may enter the competition for vacancies at the next registration.

College of Arts and Sciences

B.A. WITH MAJOR IN COMMUNICATION SCIENCES AND DISORDERS

Required 125 hours, including:

I. General Education Requirements (see pages 27-30).

II. The Following Curriculum

A. Major Course Requirements

<table>
<thead>
<tr>
<th>Course Code</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>(3)</td>
</tr>
<tr>
<td>CSD 235</td>
<td>Speech and Hearing Science</td>
<td>(3)</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 381</td>
<td>Introduction to Practicum I</td>
<td>(2)</td>
</tr>
<tr>
<td>CSD 382</td>
<td>Introduction to Practicum II</td>
<td>(2)</td>
</tr>
<tr>
<td>CSD 383</td>
<td>Clinical Tests &amp; Measures</td>
<td>(3)</td>
</tr>
<tr>
<td>CSD 422</td>
<td>Neuropsychology</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 Orofacial Anomalies</td>
<td>(2)</td>
</tr>
</tbody>
</table>

Total Credit Hours: 117

B. Major courses not required for B.A., but recommended:

<table>
<thead>
<tr>
<th>Course Code</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 430</td>
<td>Sign Language</td>
<td>(2)</td>
</tr>
<tr>
<td>CSD 484</td>
<td>Clinical Practicum II: Speech-Language Pathology</td>
<td>(1-4)</td>
</tr>
<tr>
<td>CSD 485</td>
<td>Clinical Practicum II: Speech-Language Pathology</td>
<td>(1-4)</td>
</tr>
<tr>
<td>CSD 486</td>
<td>Clinical Practicum III: Audiology</td>
<td>(1-4)</td>
</tr>
<tr>
<td>CSD 496</td>
<td>Special Problems in Communication Disorders</td>
<td>(1-3)</td>
</tr>
</tbody>
</table>
Computer Science (CSci)

M. Ali (Chair), Dai, Maxwell, O’Neill, Valeroso, and Wiggen

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 with a Major in Computer Science 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 Computer Science Accreditation Commission (CSAC) of the Computing Sciences Accreditation Board (CSAB), a specialized accrediting body recognized by the Council on Postsecondary Accreditation (COPA) and the U.S. Department of Education.

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-based 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.

College of Arts and Sciences

B.S. WITH MAJOR IN COMPUTER SCIENCE

Required 125 hours, including:

II. College of Arts and Sciences Requirements. See page 37.
III. Courses from computer science as follows:
   CSci 160..................Computer Science I......................(4)
Courses

101. Introduction to Computers, 3 credits. Recommended corequisite: Csci 101L. An overview of the fundamental concepts and applications of computer science. Topics include data storage, hardware, operating systems, and programming principles. F,S

101L. Introduction to Computers Laboratory, 1 credit. Recommended corequisite: Csci 101. An introductory laboratory course to complement Csci 101. Activities will include hands-on experience with operating systems and application software (including word processors, spreadsheets, and databases). Su/F grading only, F,S

110. 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 data types and control structures. A student may not receive credit for both Csci 110 and Csci 160 F,S

111. Computer Programming II, 3 credits. Prerequisite: Csci 110. 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 111 and Csci 161.

160. Computer Science I, 4 credits. An introduction to computer science, with problem solving, algorithm development, and structured programming in a high-level language. Emphasis on learning how to design, code, debug, and document programs, using techniques of good programming style. Includes laboratory. A student may not receive credit for both Csci 160 and Csci 110. F,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 111. F,S

223. Computer Organization and Programming, 4 credits. Prerequisite: Csci 160 or knowledge of one high-level language. Computer structure, machine representation of numbers and characters, instructions and computer systems. Includes laboratory. F,S

322. Computer Architecture, 3 credits. Prerequisite: Csci 242, Math 208. Design, implementation, verification and maintenance of large-scale software systems. A student may not receive credit for both Csci 322 and Csci 242. Prerequisite: Csci 322 or Csci 328. An introduction to the concepts of data transmission, communication hardware and protocols, communication software and the design, performance and management of computer networks. F

337. Cooperative Education, 1-8 credits repeatable to 18. Prerequisite: 15 completed credits in Csci including Csci 324, in addition to standard co-op requirements. A maximum of 3 cooperative education credits may be applied against requirements for a Csci major. 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,S

351. Introduction to File Processing, 3 credits. Prerequisite: Csci 242. Techniques of using mass storage devices. Sequential, random and key-accessed files. B-trees and inverted file structures. F

355. Organization of Programming Language, 3 credits. Prerequisite: Csci 242. 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 355 and Csci 325. F

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. On demand. F

411. Information Systems, 3 credits. Prerequisite: Csci 351. Representation, storage, and processing of information. Design of an information system to solve a specific problem. F

427. Advanced Data Communications. 3 credits. Prerequisite: Csci 327. Analysis of existing and future data communications technologies and protocols, including the modeling of realistic networked environments and the analysis of their performance. On Demand.

435. Formal Languages and Automata, 3 credits. Prerequisite: Csci 242. An introduction to the Chomsky formal language hierarchy and the automata which correspond to each of the language classes. F

445. Mathematical Modeling and Simulation. 3 credits. Prerequisites: Csci 161 or Csci 111. Math 212 and a statistics course. A study of various mathematical applications for digital computers, including the modeling, simulation and interpretation of the solution of complex systems. F

485. Computer Graphics, 3 credits. Prerequisites: Csci 242 and Math 212. Introduction to computer graphics hardware and software. Topics include display technologies, clipping, three-dimensional representations, shading, and color. On demand.

491. Operating Systems I, 3 credits. Prerequisite: Csci 242. Resource allocation, multitasking, virtual systems, operating system kernels, monitors, supervisors. F

492. Operating Systems II, 3 credits. Prerequisite: Csci 491. A study of the implementation of operating systems and parts of operating systems, and development of system software. S

455. Database Management Systems. 3 credits. Prerequisite: Csci 351. Database concepts, database administration, database design, and database performance, including the partial design of a DBMS application. On demand.

463. Software Engineering, 3 credits. Prerequisite: Csci 351. This course teaches software engineering principles and techniques used in the specification, design, implementation, verification and maintenance of large-scale software systems. Major
software development methodologies are reviewed. As development team members, stu-
dents participate in a group project involving the production or revision of a complex
software product. On demand.

465. Principles of Translation. 3 credits. Prerequisite: CSci 365. Techniques for
automatic translation of high-level languages to executable code. F

472. Seminars in Computer Science. 1 credit. May be repeated (3 credits maxi-
mum). Prerequisite: consent of instructor. A course for advanced students. S/U grading
only. F,S

491. Special Projects in Computer Science. 1-3 credits varying with the choice
of project. May be repeated (6 credits maximum). Prerequisite: consent of instructor. A
course for advanced students. F,S

Counseling
(Coun)

C. Barké (Chair), Henly, Henry, Jacobs,
Juntunen-Smith, Simms, and Twohey

The Department of Counseling offers graduate programs leading to the
degrees of Master of Arts in Counseling and the Doctor of Phil-
osophy in Counseling Psychology. The M.A. is accredited by the
National Council for the Accreditation of Teacher Education (NCATE).
The Ph.D. in Counseling Psychology has been provisionally accredited
by the American Psychological Association and prepares graduates for
Psychologist licensure in North Dakota. Course work for the M.A.
degree satisfies eligibility requirements for the North Dakota Board of
Counselor Examiners for certification as a Counselor, for the Department
of Public Instruction for School Counselor certification, and for the
North Dakota Division of Alcoholism and Drug Abuse for Addiction
Counselor licensure. 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, addiction treat-
ment 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 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 statis-
tics. Students are admitted once a year, with completed applications
required by February 1 for admission for the following year.

Typically, 20 students are admitted each year from a pool of 70 or
more. The masters program requires completion of 48 semester credits,
generally requires two years of full-time study, and includes a two
semester half-time supervised internship at an external agency.

The doctoral degree program, Counseling Psychology, provides
advanced preparation in counseling theory, practice, and research. It
requires completion of a masters degree prior to admission, which is
based upon achievement in undergraduate and graduate work, scores on
the Graduate Record Examinations, recommendations, and relevant
experience. The program requires three years of full-time study, 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 pri-
vate practice. Four to six students are admitted each year.

Details of the masters and doctoral degree programs in the Depart-
ment of Counseling may be found in the graduate section of this catalog.
For more information, contact the Chairperson, Department of Coun-
seling (701-777-2279).

Courses

101. Career Decision-making. 1 credit. The process of making career choices and
decisions is explored through assessment, instruments, class activities, and assignments.
Student interests, skills, and work values are explored and related to information about
careers and job market trends. Recommended for students in the process of choosing an
academic major. S/U grading only. F,S

Criminal Justice Studies
(CJS)

M. Meyer (Director)

This program is a cooperative venture which pools the resources of the Departments of Philosophy, Political Science, Psychology, 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 edu-
cational 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 planning to pursue a major
or minor in Criminal Justice Studies must make formal application for
admission through the Director of the Criminal Justice Studies Program.
To be formally admitted, students must have completed 45 total credit
hours with a minimum overall grade point average of 2.70, must have
completed CJS 251, CJS 252, 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. Once admitted, majors will be required to maintain a
GPA of 2.70 overall and in the major. Failure to meet either or both of
these requirements will result in the student being placed on probation
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 hours, including:

I. General Education Requirements, see pages 27-30.

II. College of Arts and Sciences Requirements, see page 37.

III. The Following Curriculum:

Pre-admission Requirements:

CJS 251.................Introduction to Criminal Justice ..............................(3)
CJS 252...............Introduction to Law Enforcement ............................(3)
Soc 252...............Criminology .......................................................(3)
Soc 253...............Juvenile Delinquency .........................................(3)

33 additional major hours, including:

CJS 301.................Criminological Theory ..............................................(3)
CJS 353...............Law for Criminal Justice System ............................(3)
Soc 323...............Sociological Research Methods ..............................(3)
Soc 326...............Sociological Statistics ............................................(3)
Phil 412...............Philosophy of Law .................................................(3)
PScii 306.................American Constitution-Civil Liberties ...................(3)

9 hours from:

Anth 345.................Forensic Science ..................................................(3)
Soc 351...............Corrections .............................................................(3)
CJS 331...............Victimology .............................................................(3)
CJS 350...............Correctional Alternatives ...........................................(3)
CJS 351...............Police Administration ................................................(3)
CJS 352...............Criminal Investigation .............................................(3)
CJS 360...............Administration of Justice ...........................................(3)
CJS 452...............Police Role in Society ................................................(3)

6 hours from:

Soc 250...............Diversity in American Society .....................................(3)
Soc 361...............Social Psychology ......................................................(3)
Soc 435...............Race and Ethnic Relations ..........................................(3)
Soc 436...............Social Inequality .......................................................(3)
Soc 450...............The Criminal Justice System ....................................(3)
Psy 251...............Developmental Psychology .........................................(4)
Psy 360...............Introduction to Personality ..........................................(3)
Psy 370...............Abnormal Psychology ................................................(3)

A concentration in a single supplementary field other than criminal justice stud-
ies is also required of all criminal justice majors. This concentration may be met
in two ways: (1) a language proficiency of level IV in a modern foreign lan-
guage; or (2) 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

Required 21 hours from:

CJS 251  Introduction to Criminal Justice  (3)
CJS 252  Introduction to Law Enforcement  (3)
Soc 252  Criminology  (3)
Soc 253  Juvenile Delinquency  (3)

Required 9 hours from:

Anth 345  Forensic Science  (3)
CJS 301  Criminology Theory  (3)
CJS 331  Victimization  (3)
CJS 350  Criminal Justice Administration  (3)
CJS 351  Police Administration  (3)
CJS 352  Criminal Investigation  (3)
CJS 353  Law for Criminal Justice Practitioners  (3)
CJS 360  Administration of Justice  (3)
CJS 452  The Police Role in Society  (3)
Phil 308  Philosophy of Law and Social Order  (3)
Psci 306  American Constitution—Civil Liberties  (3)
Soc 351  Corrections  (3)

Courses

251. 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, crimino-logy, corrections, sociology, social welfare, government and pre-law. F

252. Introduction to Law Enforcement. 3 credits. Prerequisite: CJS 251. Introduces the student to the specific field of law enforcement. Provides an overview of federal, state, and local law enforcement agencies. Reviews the coordination require-ments of the system. S.

301. Criminological Theory. 3 credits. Prerequisite: CJS 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 theoretical schools of thought which have influenced the discipline of criminology. The basic goal of this course is to help the stu-dent develop an understanding of and appreciation for the insights gained by examining crime and criminals through different theoretical frameworks. F, S.

331. Victimization. 3 credits. Prerequisite: CJS majors and minors only. This class will provide an overview of the literature and research concerning victimization. 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 compensa-tion initiatives. The basic goal of this course is to help the student develop an under-standing of the impact of victimization on the victim, those associated with the victim, the criminal justice system, and each of us as individuals. F.

337. Cooperative Education. 1-8 credits, repeatable to 16. Prerequisite: CJS 491 (1 cr.) and CJS 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 CJS 337 will not be eligible to register in CJS 480. Cooperative Internship. 1 credits grading only. F, S, SS.

350. Correctional Alternatives. 3 credits. Prerequisites: Restricted to CJS majors and minors only. This course is designed to explore and evaluate intervention strategies developed in the criminal justice system as alternatives to institutional corrections in the sen-tencing of adjudicated persons. Among these options this course will explore community corrections, parole, house arrest, restitution, community service, and the development of intervention services in support of the dispositions. S.

351. Police Administration. 3 credits. Prerequisite: CJS 252. Restricted to CJS majors and minors. Principles of police administration and organization for a modern police agency. Included are planning and development of organizations, direction, goal identification, etc. F.

352. Criminal Investigation. 3 credits. Prerequisite: CJS majors and minors only. An overview and examination of basic principles and techniques in the criminal investi-gations procedures and the rules of the law of evidence in criminal court proceedings. F.

353. Law for Criminal Justice System. 3 credits. Prerequisite: CJS majors and minors only. An overview of principles of general and criminal procedure as established by common law and contemporary legal codes in the United States. S.

360. Administration of Justice. 3 credits. Prerequisites: Restricted to CJS majors and minors. This course addresses issues of the nature of organizations, the individual in the organization, group behavior in organizations, processes in organizations, and organiza-tional change as applied to the administration of criminal justice. F.

393. Problems in Criminal Justice Practitioners. 3-6 credits. Maximum of 6 credits. Prerequisite: CJS majors and minors only, consent of instructor. Student study special topics under the direction and supervision of a member of the staff; prior consent of instructor is required before enrollment. F, S.

452. The Police Role in Society. 3 credits. CJS majors and minors only. The func-tions and role of police in society with a focus on contemporary issues in police organi-zation and administration. S.

480. Administrative Internship. 2-12 credits. Prerequisite: CJS 491 (1 credit). Prerequisite: CJS majors and minors only, consent of instructor. Prior approval of instructor required prior enrollment. SU grading only. On-the-job training in a criminal justice position with final report and analysis of the agency by the intern. F, S, SS.

491. Readings in Criminal Justice Studies. 1-6 credits. Prerequisite: CJS majors and minors only, consent of instructor. Selected readings with oral and written reports. F, S.

Cytotechnology

R. Sophier, M.D. (Medical Director)
H. E. Thompson, SCT (Program Director)

Cytotechnology is a high level medical laboratory specialty centered on the subject of diagnostic cytology, a field practiced by both patholo-gists and technologists. It specializes in the detection and diagnosis of abnormal human body cells, especially for the diagnosis of cancers, or pre-cancerous conditions. A cytotechnologist’s work consists primarily of screening cell samples using a microscope, searching for abnormal cells. Once found and marked, these cells are reviewed by a pathologist. Cytotechnologists are also trained to be proficient in cytology specimen preparation and in laboratory quality assurance methods.

Diagnostic cytology practice is documented at UND back to 1952. The Department of Pathology has offered an accredited course in cyto-technology since 1967. In 1975 it was upgraded from a non-certification to a four-year, degree granting program, and in 1988 expanded from a maximum capacity of four to six students. Most recent-ly awarded reaccreditation in 1993, the program currently exists as one of over 60 accredited cytotechnology programs in only 34 states which graduate a total of about 300 cytotechnologists annually.

The Cytotechnology Program (Path 401, Path 402, & Path 403) is a 12-month professional course designed to prepare students for a career in cytotechnology. Enrollment in the senior year professional phase is limited to 6 students per year. University commencement and graduation from the program both occur at the end of summer sessions. Students are selected using criteria of academic performance, references, an interview, program officials, and a background in life sciences. Upon comple-tion 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 (profes-sional phase) must be submitted to the Program Director by January 1 to be considered for enrollment Fall semester. If permission to enroll is granted, it will be subject to the following conditions:

(A) All remaining required courses except Path 402 and 403 must be completed with a grade of C or better prior to enrollment in Path 401.
(B) Students must be classified by the University as having good academic standing (i.e., not on probation and eligible to enroll in the University).
(C) Prior to enrollment in Path 401 all other admission requirements (as noted on the Cytotechnology Program application form) must be completed.

Failure to meet any of these conditions may result in denial of permis-sion to register. To be eligible for enrollment in the Professional Phase, 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 professional phase (Path 401, 402, 403), they must be eligible to be awarded a bachelor’s degree (or already possess a degree). Persons without a bache-lor’s degree, transcripts must indicate that a minimum of 20 semester hours of biological science, 8 semester hours of chem-istry, and 3 semester hours of college mathematics have been taken

School of Medicine

B.S. IN CYTOTECHNOLOGY

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.
II. The Following Curriculum:

Anat 204  Anatomy for Paramedical Personnel  (3-5)
Biol 101, 102  Introduction to Biology  (3-8)

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Economics
(Econ)

D. Ramsett (Chair), Bagheri, Biederman, Blackwell, Ceyhun, Khacut, Korbach, O'Neill, and Stradley

Economics is the study of resources and how they may be used to achieve and maximize the economic goals of individuals, business firms, organizations, governments and societies. The study of Economics is typically divided into two parts: macro-economics (or aggregate economic analysis) studies economics from a broad-based perspective, including problems and issues such as unemployment, inflation and economic growth; micro-economics (or partial economic analysis) 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 which is unique to this discipline, but is of great importance to individuals and to society.

The mission of the Economics Department falls into three important and interdependent areas. The department 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 department 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 department 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.

The Department of Economics offers three undergraduate programs that prepare students for careers in business, banking, and government. The B.B.A. with a major in Banking and Financial Economics or with a major in Business Economics is offered by the College of Business and Public Administration. The major in Banking and Financial Economics offers a comprehensive curriculum which provides a background in economic theory, the principles and practices of banks and other financial institutions, bank regulation, macroeconomic policy and international finance. Experience has shown that graduates of this program are prepared to immediately function in highly responsible positions in financial institutions or regulatory agencies and, also have the advantages of the “big picture” perspective provided by a knowledge of economics in general. The major in Business Economics emphasizes the business firm—integrating economics with related areas in marketing, management, accounting, finance and quantitative analysis. This program provides students with the analytical and technical skills increasingly required in business and government at local, regional, national and international levels. The B.A. with a minor in Economics is offered by the College of Arts and Sciences. This is a flexible program for students who wish to combine the study of Economics with such fields as Mathematics, Statistics, the Social Sciences or Industrial Technology. A minor in Economics also is offered by the College of Arts and Sciences.

Graduates from the departments programs may be employed as bank officers, bank examiners, economic analysts, financial analysts, economic forecasters, and many other related professions. 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

All B.B.A. candidates must fulfill the College of Business and Public Administration degree requirements.

B.B.A. WITH MAJOR IN BANKING AND FINANCIAL ECONOMICS

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.
II. College of Business and Public Administration Requirements, see page 39 and including:

- Acc 200, 201: Elements of Accounting I & II
- Acc 315: Business in the Legal Environment
- BVED 217: Fundamentals of Management
- Comm 161: Fundamentals of Public Speaking
- Fin 310: Principles of Finance
- Fin 310L: Problems in Financial Management
- Math 104: Finite Mathematics
- Math 204: Survey of Calculus
- Mgmt 300: Principles of Management
- Mgmt 301: Production Management
I. General Education Requirements, see pages 27-30.

II. All students must complete the following 36 credits:

Required courses:

- Anth 171: Cultural Anthropology (3)
- Psy 101: Introduction to Psychology (3)
- Soc 101: Introduction to Sociology (3)

Required courses:

- Acc 218: Computer Applications in Business (2)
- Acc 301: Intermediate Accounting I (4)
- Econ 201: Principles of Microeconomics (3)
- Econ 202: Principles of Macroeconomics (3)
- Econ 210: Introduction to Business and Economic Statistics (3)
- Econ 303: Money and Banking (3)
- Econ 305: Principles of Banking (3)
- Econ 306: Intermediate Microeconomic Theory (3)
- Econ 309: Intermediate Macroeconomic Theory and Policy (3)
- Econ 405: Bank Regulation (3)
- Econ 409: Current Issues in Macroeconomic Policy (3)
- Econ 438: International Money and Finance (3)
- Fin 460: Management of Financial Institutions (3)

Required electives: a minimum of 3 hours from:

- Acc 302: Intermediate Accounting II (4)
- Econ 310: Intermediate Business and Economic Statistics (3)
- Econ 311: Business Cycles and Forecasting (3)
- Econ 324: Public Finance (3)
- Econ 331: Comparative Economic Systems (3)
- Econ 338: International Economics (3)
- Econ 341: Labor Economics and Labor Relations (3)
- Econ 355: Government Regulation of Business (3)
- Econ 370: Issues in Applied Microeconomics (3)
- Econ 380: Current Issues in Global Economics (3)
- Econ 395**: Special Topics in Economics (1-3)
- Econ 400: History of Economic Thought (3)
- Econ 414: Managerial Economics (3)
- Econ 416: Mathematics for Economists (3)
- Econ 497**: Readings in Economics (1-3)
- Fin 321: Real Estate Finance and Investment (3)
- Fin 324: Real Estate Appraisal (3)

**No more than 6 hours of electives from Econ 395, 496 and 497 may count toward the major requirements.

III. Business Administration Requirements:

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. All students must complete the following 36 credits:

Required courses:

- Anth 171: Cultural Anthropology (3)
- Psy 101: Introduction to Psychology (3)
- Soc 101: Introduction to Sociology (3)

Required courses:

- Acc 218: Computer Applications in Business (2)
- Acc 301: Intermediate Accounting I (4)
- Econ 201: Principles of Microeconomics (3)
- Econ 202: Principles of Macroeconomics (3)
- Econ 210: Introduction to Business and Economic Statistics (3)
- Econ 303: Money and Banking (3)
- Econ 305: Principles of Banking (3)
- Econ 306: Intermediate Microeconomic Theory (3)
- Econ 309: Intermediate Macroeconomic Theory and Policy (3)
- Econ 405: Bank Regulation (3)
- Econ 409: Current Issues in Macroeconomic Policy (3)
- Econ 438: International Money and Finance (3)
- Fin 460: Management of Financial Institutions (3)

Required electives: a minimum of 3 hours from:

- Acc 302: Intermediate Accounting II (4)
- Econ 310: Intermediate Business and Economic Statistics (3)
- Econ 311: Business Cycles and Forecasting (3)
- Econ 324: Public Finance (3)
- Econ 331: Comparative Economic Systems (3)
- Econ 338: International Economics (3)
- Econ 341: Labor Economics and Labor Relations (3)
- Econ 355: Government Regulation of Business (3)
- Econ 370: Issues in Applied Microeconomics (3)
- Econ 380: Current Issues in Global Economics (3)
- Econ 395**: Special Topics in Economics (1-3)
- Econ 400: History of Economic Thought (3)
- Econ 414: Managerial Economics (3)
- Econ 416: Mathematics for Economists (3)
- Econ 497**: Readings in Economics (1-3)
- Fin 321: Real Estate Finance and Investment (3)
- Fin 324: Real Estate Appraisal (3)

**No more than 6 hours of electives from Econ 395, 496 and 497 may count toward the major requirements.

IV. College of Arts and Sciences

B.A. WITH MAJOR IN BUSINESS ECONOMICS

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. All students must complete the following 36 credits:

Required courses:

- Econ 301: Principles of Macroeconomics (3)
- Econ 310: Intermediate Business and Economic Statistics (3)
- Econ 311: Business Cycles and Forecasting (3)
- Econ 324: Public Finance (3)
- Econ 331: Comparative Economic Systems (3)
- Econ 338: International Economics (3)
- Econ 341: Labor Economics and Labor Relations (3)
- Econ 355: Government Regulation of Business (2)
- Econ 395**: Special Topics in Economics (1-3)
- Econ 405: Bank Regulation (3)
- Econ 414: Managerial Economics (3)
- Econ 416: Mathematics for Economists (3)
- Econ 438: International Money and Finance (3)
- Econ 496**: Research in Economics (1-3)
- Econ 497**: Readings in Economics (1-3)
- Math 212: Calculus II (4)
- Math 213: Calculus III (4)
- Math 351: Elementary Differential Equations (3)
- Math 352: Advanced Engineering Mathematics I (3)
- Math 353: Advanced Engineering Mathematics II (3)
- Math 421: Statistical Theory I (3)
- Math 422: Statistical Theory II (3)

**No more than 6 hours of electives from Econ 395, 496, 497 may count toward the major requirements.

MINOR IN ECONOMICS

Required 20 hours including:

- Econ 201: Principles of Microeconomics (3)
- Econ 202: Principles of Macroeconomics (3)
- Econ 301: Principles of 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
system; price determination and resource allocation under competitive and monopolistic
conditions. Review of selected contemporary economic issues. (No credit if Economics
201-202. Principles I and II, have been completed or audited. Not available to students in
the College of Business and Public Administration.) F,S

201. Principles of Microeconomics. 3 credits. Open to freshmen. Pr- or corequi-
site: 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, distribution
of income, and international trade. F,S

202. Principles of Macroeconomics. 3 credits. Prerequisite: Econ 201. Nature,
method, and scope of 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.

210. Introduction to Business and Economic Statistics. 3 credits. Prerequisite:
Math 103 or 104, or equivalent. Descriptive statistics; probability distributions; sam-
ping distributions; statistical inference for means and proportions; hypothesis testing;
simple regression and correlation; non-parametric statistics. F,S

303. Money and Banking. 3 credits. Prerequisite: Econ 201 and 202. Nature of
our current Monetary system; functional analysis of commercial bank operations; lim-
lits 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 intro-
duces the students to basic principles of banking, saving 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, risk, and scope of services. F

308. Intermediate Microeconomic Theory. 3 credits. Prerequisite: Econ 201 and
202. Theory of demand, production, and cost; price determination under alternative mar-
ket structures; general equilibrium and economic welfare; analysis of market failure;
aplications to public policy. (Core requirement for students planning advanced study in
Economics.) F

309. Intermediate Macroeconomic Theory and Policy. 3 credits. Prerequisite:
Econ 201 and 202. Principles of Macroeconomics. 3 credits. Prerequisite: Econ 303 and
202. Theory of demand, production, and cost; price determination under alternative mar-
ket structures; general equilibrium and economic welfare; analysis of market failure;
aplications to public policy. (Core requirement for students planning advanced study in
Economics.) F

310. Intermediate Business and Economic Statistics. 3 credits. Prerequisites:
Econ 210, Math 204 or equivalent, BVED 217 or equivalent. Estimation and interpreta-
tion of models widely used in Business and Economics. Topics include multiple regres-
sion, analysis of variance and covariance, cross-sectional and time-series problems, and
multiple equation models. F

311. Business Cycles and Forecasting. 3 credits. Prerequisite: Econ 210. An examina-
tion of the nature and theory of cyclical changes in economic activity; practical
applications of direct and indirect methods of forecasting economic trends at various lev-
els of aggregation. S

324. Public Finance. 3 credits. Prerequisites: Econ 201 and Econ 202. Growth and
effects of the public sector of the economy emphasizing effects of taxation and spending
or borrowing and debt management on efficiency and use of economic resources. F or S

330. Business and Economic History. 3 credits. Prerequisites: Econ 105 or 201 or
202. This course illustrates principles and issues relating to business and economic
development through an examination of business and economic histories of various coun-
tries. Industrial organization, productivity, cost, scale, technology, and consumer
behavior historically and comparatively are examined. Consideration is given to business
cycles since 1760. Interpretations of the Great Depression are examined in detail. Addi-
tionally, the course examines the role of business and government in economic
development through a comparative examination including the United States, Great
Britain, Sweden, France, Germany, Russia, Japan, China, and Korea. The development
of international political and economic systems after World War II is considered, includ-
ing GATT, NAFTA, NATO, and the European Community. F

331. Comparative Economic Systems. 3 credits. Prerequisite: Econ 201 and
Econ 202. Theoretical foundation of capitalism, comparative role of the price mecha-
nism and centralized planning; historical development of the British and Soviet
economies; analysis of resource allocation, economic institutions and problems under
contrasting economic systems. On demand.

337. 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

338. International Economics. 3 credits. Prerequisite: Econ 201 and 202. Economic basis for gain in international trade; capital and population movements; inter-
national disequilibrium and the process of balance-of-payments adjustments; tariffs,
derived countries. F,S

341. Labor Economics and Labor Relations. 3 credits. Prerequisite: Econ 201
and 202. A survey of the nature and causes of the economic problems of the American
worker and the actions of labor and management to reduce these problems. Emphasis
is placed on theories, public and private legislation, and to alleviate these problems. The course comparatively surveys the history and systematic theories of labor movements and the market and institutional influences on wages and employment. Particular emphasis will be placed on the role of industrial
relations, employment and income access, and the adjustment of labor dis-
patries. F

405. Government Regulation of Business. 3 credits. Prerequisite: Econ 201 and
202. An exploration of the many ways that federal and state governments regulate busi-
ness activity. Government regulation falls into three broad areas: economic regulation;
social regulation; antitrust laws. 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 airlines,
telecommunications, and trucking. F

370. Issues in Applied Microeconomics. 3 credits. Prerequisite: Econ 201 and
202. This course covers 3-4 topics in applied microeconomics. The specific topics cov-
ered will vary depending upon the instructor. A sampling of potential topics includes:
the economics of baseball; the scope of the modern corporation; the economics of health
care; environmental economics. On demand

388. Current Issues in Global Economics. 3 credits. Prerequisites: Econ 201 and
202. This course covers issues relating to trade, foreign investment, trade blocs,
exchange rate changes, development issues, external debt of developing countries,
investment in infrastructure and education and health, as well as development vs. envi-
ronment (or sustainable development). The issues considered will vary from year to year.
On demand.

389. Special Topics in Economics. 1-3 credits. Prerequisite: Econ 201 and Econ 202.
Specific 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.

400. History of Economic Thought. 3 credits. Prerequisite: Econ 105 or Econ 201
and 202. Broad overview of the major schools of thought including Mercantilists,
Physiocrats, Classical, Marxist, Socialist, Historical, Austrian, Neoclassical, Institutional,
Keynesian, and Monetarist. The coverage includes value theory, income/expenditure the-
ory, growth/development theory, scientific method, scope and public policy. S

405. Bank Regulation. 3 credits. Prerequisite: Econ 303. The regulations imposed
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. F

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 histori-
cal, contemporary, and theoretical perspectives. Emphasis is placed on recent develop-
ments 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

414. Managerial Economics. 3 credits. Prerequisites: Econ 210, 308; Math 204 or
equivalent; BVED 217 or equivalent. A synthesis relating economic theory, statis-
tics, and mathematics to pricing, output, and resource allocation decisions by business
firms. S

416. Mathematics for Economists. 3 credits. Prerequisites: Econ 308 and 309;
Math 204 or 211. 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 func-
tions, cycles, activity analysis, mathematical programming, and model building. On
demand.

420. Economic Education. 3 credits. Prerequisite: Econ 105 or equivalent.
Designed for students planning to teach secondary social studies. Curriculum materials
and methods for 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

485. Internship. 1-4 credits. Prerequisite: Permission of Department Committee
on Internships. 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 advisor in planning the internship with an
approved cooperating institution. F,S,SS

496. Research in Economics. 1-3 credits. Research work and use of original doc-
uments; collecting of material and preparing of special topics and bibliographies; famil-
iliarizing the student with government reports of wage earners and society. F,S,SS

497. Readings in Economics. 1-3 credits. Extensive reading in the student’s field
of specialization; conference arranged with the instructor; written reports to be submit-
ted. 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 (S/U 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 (S/U grading). 2 credits. May be repeated.
495A. Special Problems (regular grading). 495B. Special Problems (S/U 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 Resident 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)

N. Bengiamin (Chair), Hootman, Johnson, Miles, Moe, Salehfar, and Schultz

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 conceive 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 governmental entry level jobs or to pursue further education at the graduate level.

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 encompassing 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) the 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) a choice by which junior and senior students may select courses with a focus on a particular subject, or related subjects, in electrical engineering. These subjects include systems engineering, power systems planning and distribution, robotics, signal processing, computers, artificial intelligence, controls, and microwaves.

To prepare students for practice, engineering 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 which brings previous diverse knowledge into culmination. Computer applications, statistical methods, and 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 awareness of industry practice 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, and 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 understand the purpose of their education and the profession. Through this program, students and faculty establish personal relationships and enthusiasm toward engineering education.

School of Engineering and Mines

B.S. IN ELECTRICAL ENGINEERING

Required 136 hours, including:
I. General Education Requirements, see pages 27-30.
II. The Following Curriculum:

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<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<tr>
<td>Chem 105</td>
<td>General Chemistry I</td>
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<td>Econ 201</td>
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<tr>
<td>EE 101</td>
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<td>EE 201</td>
<td>Intro to Digital Electronics</td>
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<td>Engl 101</td>
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<td>Engl 209</td>
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<td>Engl 103</td>
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<td>Math 211, 212</td>
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<tr>
<td>Phil 370</td>
<td>Ethics in Engineering and Science</td>
<td>(3)</td>
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<tr>
<td>EE 409</td>
<td>Distributed Networks</td>
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<tr>
<td>EE 421</td>
<td>Electronics II</td>
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<tr>
<td>Math 353</td>
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<td>Phys 208</td>
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Sophomore Year

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<td>EE 314</td>
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<td>EE 316</td>
<td>Electric &amp; Magnetic Fields</td>
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<td>EE 321</td>
<td>Electronics I</td>
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<td>EE 401</td>
<td>Electromechanical Energy Conversion</td>
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<td>EE 405</td>
<td>Control Systems I</td>
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<td>Math 353</td>
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<td>Phys 208</td>
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Junior Year

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<td>EE 480/481</td>
<td>Senior Design I &amp; II</td>
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<td>Phys 320</td>
<td>Elementary Solid State Physics</td>
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<td>EE 425</td>
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<tr>
<td>Phil 370</td>
<td>Ethics in Engineering and Science</td>
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** Technical Electives: Approved (by adviser) courses in Engineering, Math, Computer Science and Physical Science not prerequisite to any required course in Electrical Engineering, and normally should be a 300 or higher level course.
*** May be waived for transfer students (substitute science credit required.)
Some of the following courses may be waived by completing Engr 100 Professional Assessment and Evaluation: EE 101, Engr 101, EE 201, EE 202, EE 304, and EE 337.
Phil 370 may also be waived, but not the University’s GER. (See Engr 100 course description on pg. 91.)
Courses

101. Introduction to Electrical Engineering. 1 credit. An introduction to the electrical engineering discipline. Recent technologies and practices in electronics, computers, controls, power systems, robotics, communication, and microwaves. F

201. Introduction to Digital Electronics. 1 credit. Co-requisite: EE 202. Introduction to the fundamentals of digital circuits design. Logic gates, Boolean algebra, Karnaugh maps; Mathematical operations; Flip Flops; Counters. S


206. Electrical Engineering Fundamentals. 3 credits. Prerequisite: Math 212*. Co-requisite: Math 211. Introduction to the fundamentals of electrical engineering, applying these concepts in developing the fundamentals of energy conversion, electronics and circuit theory. F,S

300. Circuits Laboratory I. 1 credit. Co-requisite: EE 206. Introduction to methods of experimental circuit analysis and to proper uses of laboratory equipment. F,S

307. Circuits Laboratory II. 1 credit. Prerequisite: EE 306. Co-requisite: EE 313. Experimental circuit analysis and proper uses of laboratory equipment. S


313. Linear Electric Circuits. 3 credits. Prerequisite: EE 200*. Corequisites: Math 351 and Phys 206*. Linear electric circuits in the steady state and transient conditions; two-port circuits; Fourier Series single and polyphase systems. F,S

314. Signals and Systems. 3 credits. Prerequisites: EE 313*, Math 351, and Phys 206*. Passive filters; Laplace transform applications; Fourier transform; Z-transform; Nyquist sampling theorem; other topics as time permits (state variables; introduction to control and communications theory; discrete Fourier transform). S

316. Electric and Magnetic Fields. 4 credits. Prerequisites: Math 351, and Physics 206*. Field produced by simple distributions of electric charges and magnetic poles, field mapping and application to engineering problems. F


337. Cooperative Education. 1-8 credits repeatable to 24. 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,SS

401. Electromechanical Energy Conversion. 4 credits. Prerequisite: EE 313 and 316. Theory and operation of transformers, induction motors, synchronous machines and D.C. machines and associated equipment. S

402. Design of Electrical Apparatus. 3 credits. Prerequisite: EE 401. Analysis and design of relays, transformers, and single phase induction motors, interaction of magnetic circuits and electrical circuits and effects of each on the other. On demand.

403. Senior Laboratory, 1 credit. Prerequisite: EE 304. Pre- or Co-requisite: EE 401, 405. Hands-on experience in electric machines, energy conversion, system analysis, and design. F

405. Control Systems I. 3 credits. Prerequisite: EE 314. Dynamic response and modeling of linear control systems; stability analysis; design of controllers using frequency domain technique. S

409. Distributed Networks. 2 credits. Prerequisite: EE 313 and 316. Fundamentals of power and communications transmission lines. S

411. Communications Engineering. 3 credits. Prerequisites: EE 314. Mathematical definition of random and deterministic signals and a study of various modulation systems. On demand.

421. Electronics II. 3 credits. Prerequisite: EE 314 and 321. Analysis of electronic devices, including power amplifiers, pulse and digital circuits. S


424. Electronic Circuits. 3 credits. Prerequisite: EE 421. 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. Prerequisite: EE 321 or consent of instructor. Fundamentals of industrial robots’ configuration, programming, and control are addressed. Actuators, sensing devices, coordinates transformation and task planning are emphasized. The laboratory provides hands-on experience with numerical control and robots’ control. 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 wave analysis, microwave networked, 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 206* or consent of instructor. The study of complete computer systems including digital hardware interconnection and organization and various operation and control methods necessary for realizing digital computers and analyzers. On demand.

452. Microprocessor Hardware. 3 credits. Prerequisites: EE 201 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.


480. Senior Design I. 1 credit. Prerequisites: Three courses out of EE 401, 405, 409, 421. EE elective: Design methodologies, proposal writing, teamwork, communication skills. A complete proposal for senior design and preliminary work must be completed. F,S

483. Senior Design II. 2 credits. Prerequisite: EE 480. Complete the project initiated in EE 480. A detailed formal report and an oral presentation are required. F,S

482. Technical Presentation and Portfolio. 3 credits. Prerequisite: Senior standing and consent of instructor. Engineering report and assessment writing; technical oral presentation, portfolio techniques, self-assessment, teamwork and dynamics. 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.

Engineering

(Engr)

Courses

100. Professional Assessment and Evaluation. 1 credit. 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. (See CE, EE and Engr curricula listings.)

101. Introduction to Engineering and Design. 2 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

102. Descriptive Geometry. 2 credits. Prerequisite: Engr 101. Study of basic engineering and geological applications of 3-D geometric problem solving. Analysis techniques are presented for the enhancement of spatial visualization skills. Computer Aided Design applications are utilized using current methods and techniques commonly found in industry. S

201. Computer Applications in Engineering. 2 credits. The fundamentals of digital computer programming are presented with special emphasis on a high-level language and engineering applications. The fundamentals of PC-based software applications and operating systems are also presented. F,S

212. Advanced 3-D Computer Geometric Modeling and Analysis. 2 credits. Prerequisites: Engr 101 and 102. The study of solid modeling methods (constructive solid geometry, boundary representation, and octree) including Boolean logic and operators, parametric modeling, transformations, surface modeling, documentation, and standards. F

460. Engineering Economy. 3 credits. Prerequisite: Econ 201. Economic effects of engineering decisions involving time, value of money, economic balance, cost estimating and venture analysis. F,S,SS

English Language and Literature

(Engl)

R. Lewis (Chair), Anderegg, Beard, Borden, Carson, Coleman, Dixon, Donaldson, Hampsten, Huang, Koprince, Little, Marshall, McKenzie, J. Meek, M. Meek, O’Donnell, Rankin, Sheridan, and Wiener

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, librar-
ianship, and the professions of law, medicine, the ministry, and diplomacy.

English 251 and 252 (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 211, 213, and/or 217, or their equivalents, may substitute those courses or their equivalents 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 the History of the English Language (English 442) and 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 course work 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:
   151, 152 Masterpieces of European Literature
   200* Topics in Language and Literature (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)
   367 American Indian Literature (when applicable and approved)
   369 Literature and Culture
   401 Studies in Medieval Literature
   402 Studies in Early Renaissance Literature
   403 Studies in Colonial American Literature
   404 Studies in Late 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:
   200* Topics in Language and Literature (when applicable and approved)
   315, 316 Shakespeare
   341 Special Topics in Literature (when applicable and approved), e.g., Keats, Melville, Dickinson, Faulkner

3. Generic courses, including:
   200* Topics in Language and Literature (when applicable and approved), e.g., The Modern Short Story
   211* Introduction to Fiction
   213* Introduction to Poetry
   217* Introduction to Drama
   219* Introduction to Film
   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)
   365 Black American Writers (when applicable and approved)
   367 American Indian Literature (when applicable and approved)
   369 Literature and Culture (when applicable and approved)
   413 Studies in Literature for Young Readers
   419 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:
   200* Topics in Language and Literature (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)
   365 Black American Writers (when applicable and approved)
   369 Literature and Culture (when applicable and approved)
   413 Studies in Literature for Young Readers
   415 Special Topics in Literature (when applicable and approved), e.g., Literature and Psychology, Literature of Courtly Love, Literature of Empire

5. Language and Linguistics courses, including:
   161, 162 American Indian Languages I and II
   200* Topics in Language and Literature (when applicable and approved)
   207 Introduction to Linguistics
   309 Modern Grammar
   370 Language and Culture
   417 Special Topics in Language, e.g., Transformational Grammar, Classical Rhetoric
   419 Teaching English as a Second Language
   442 History of the English Language

6. Writing courses, including:
   203, 308 Composition III and IV
   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)*

*No more than 2 credits may be applied to the distribution requirement.

College of Arts and Sciences

B.A. WITH MAJOR IN ENGLISH

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. The Following Curriculum:

Major Requirements — 36 hours including 5.6 hours of introductory literature, preferably:

Engl 251 .........................Analysis of Literature I .........................(3)
Engl 252 .........................Analysis of Literature II .........................(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 adviser.

Twelve hours must be at the 300 and 400 level levels = (30-31)

Historical period or survey courses

Major author courses

Genre 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, religious studies, and library science.

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 203 or 308

Recommended in the major: English 207, 301, 302, 303, 304, 315, 316, 357, 365, 367, and 413.

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 while taking T&L 200 (see p. 148).
The Program in Secondary Education (see p. 77), to include:
T&L 400 Methods and Materials of Teaching Reading
T&L 400 Methods and Materials of Teaching Writing

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 of Learning.

MINOR IN ENGLISH
Required: 20 hours, including 5-6 hours of introductory literature, preferably:
Engl 251 Analysis of Literature I ............................................(3)
Engl 252 Analysis of Literature II ...........................................(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 203 or 308.

Courses

101. Composition I, 3 credits. Guided practice in writing, with emphasis on thoughtful analysis of one’s subject matter, clear understanding of the writing situation, flexible use of rhetorical strategies, and development of stylistic options. Does not apply to English major or minor. F-S

102. Composition II, 3 credits. Prerequisite: English 101. Guided practice in writing, with an emphasis on more demanding writing situations. Does not apply to English major or minor. F-S

151, 152. Masterpieces of European Literature, 6 credits. Great literature of western Europe, or in the European tradition, studied with emphasis upon intellectual and cultural values. 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-S

162. American Indian Languages II, 3 credits. Continuing introductory study of one of the Native American Languages of North Dakota; repeatable for different languages. S

200. Topics in Language and Literature, 1-4 credits. A course for undergraduate students, on topics varying from term to term. F-S

203. Composition III, 3 credits. Prerequisite: English 102 or permission of department. Advanced writing. Emphasis on the rhetorical appeals and style. F-S

207. 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

209. Technical and Business Writing, 3 credits. Prerequisite: English 101. Does not apply on the English major or minor. F-S

211. Introduction to Fiction, 2 credits. Fiction studied as a literary type, for understanding and for critical appreciation. F-S

213. Introduction to Poetry, 2 credits. Poetry studied as a literary type, for understanding and for critical appreciation. F-S

217. Introduction to Drama, 2 credits. Drama studied as a literary type, for understanding and for critical appreciation. F-S

219. Introduction to Film, 2 credits. The study of film drama, concentrating on appreciation and evaluation of motion pictures. F-S

251, 252. Analysis of Literature I and II, 3 credits each. Recommended for English majors. Prerequisite: English 102. Students read, write about and discuss significant literary texts in English. A critical introduction to advanced literature courses. F-S

301, 302. Survey of English Literature, 6 credits. English literature from its beginnings to the twentieth century. F-S

303, 304. Survey of American Literature, 6 credits. The literature of the United States from its beginnings to the twentieth century. F-S

305. Creative Writing, 2 credits. Imaginative writing of various types. The course may be repeated once for credit. F-S

308. Composition IV, 2 credits. Advanced writing. Emphasis on the conventions of particular kinds of writing such as research reporting, writing for teachers, and article writing. English 203 recommended before English 308. S

309. Modern Grammar, 3 credits. Various approaches to the structure of modern English, with emphasis on dialect 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: 211, 251, or 252. Repeatable when topics vary. F


322. Studies in American Drama, 3 credits. Prior course recommended: 217, 251, or 252. Repeatable when topics vary. S

330. Studies in English Fiction, 3 credits. Prior course recommended: 211, 251, or 252. Repeatable when topics vary. S

331. Studies in English Poetry, 3 credits. Prior course recommended: 213, 251, or 252. Repeatable when topics vary. S

332. Studies in English Drama, 3 credits. Prior course recommended: 217, 251, or 252. Repeatable when topics vary. F

337. Cooperative Education, 1-8 credits, repeatable to 15. Prerequisites: 15 credits completed in English. 2.5 GPA; 2.75 GPA in English. A course designed to offer English majors work experience related to their disciplinary training in close reading, careful writing, and interpretative analysis. SU grading only. F-S, SS

357. 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-S

365. Black American Literature, 3 credits. Writing by Black Americans studied for understanding and critical appreciation. F-S

367. American Indian Literature, 3 credits. Writings by and about American Indians, studied for understanding and critical appreciation. S

369. Literature and Culture, 3 credits. Repeatable when topics vary. Prerequisite: 3 hours of English (excluding composition) or consent of the department. The study of literature in its cultural context. F-S

370. Language and Culture, 3 credits. Prerequisite: English 207. Interaction of language with other cultural subsystems. (Same course as Anthropology 370.) F-S

398. Independent Study, 1-4 credits. For English majors only. Prerequisite: Written consent of the department. Supervised independent study. Only 6 hours may apply to the 36 hour English major. F-S


403. Studies in Colonial American Literature, 3 credits. A course in the literature of America in the colonial period. Repeatable when topics vary. F-S

404. Studies in English Renaissance, 3 credits. A course in the literature of the English Renaissance, 1603-1660. Repeatable when topics vary. F-S


406. Studies in Nineteenth Century Literature, 3 credits. A course in literature in English of the Nineteenth Century. Repeatable when topics vary. F-S

407. Studies in Twentieth Century Literature, 3 credits. A course in literature in English of the Twentieth Century. Repeatable when topics vary. F-S

409. Art of the Cinematic Drama, 3 credits. Prerequisite: English 219. An investigation of the esthetics of the film drama with a concentration on the theory and evaluation of the medium. This course requires the availability of the verbal and visual arts. Repeatable when topics vary. S

411, 412. The Art of Writing, 6 credits. Prerequisite: English 305 or consent of instructor. Writing of various types, with emphasis upon a critical and professional approach. Genres vary with instructor. Each course may be repeated once for credit. F-S

413. Studies in Literature for Young Readers, 3 credits. A course in literature for young people, examining the social, historical, and aesthetic significance of the works. Course may vary by reading level, genre, historical period, and theme. Repeatable when subject matter varies. S

415. Special Topics in Literature, 1-4 credits. A course for advanced students on topics varying from year to year. Repeatable. S

417. Special Topics in Language, 1-4 credits. A course for advanced students on topics varying from year to year. Repeatable. F

419. Teaching English as a Second Language, 3 credits. Prerequisite: English 207. An introduction to the principles of teaching English as a second language, with special attention to tutoring. F-S

442. History of the English Language, 3 credits. The development of the language from the earliest times to the present. This course is required of all English graduate students and is recommended for all prospective English teachers. S

499. 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

Family Medicine
(FMed)

W. Mann (Chair), Burrell, Cariveau, Clay, Demers, Delorme, Duke, Greek, Halvorson, Hartson, Paine, Rudd, Tsuchiya, and Ziegler

The Department of Family Medicine offers the B.S. degree in Athletic Training 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 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, 207, 207L, Biol 101 and 101L, and HPER 310. It is recommended that students applying for this program meet with the academic coordinator early in their freshman year.

Students pursing 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 offered is accredited by the Committee for Accreditation of Allied Health Education Programs (CAAHEP). School of Medicine

BS. IN ATHLETIC TRAINING

Required 129 hours including:

I. General Education Requirements, see pages 27-30.

II. The following curriculum:

Pre-Admission Courses

The student must earn C or better in the following courses to be admitted in the program.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biol 101</td>
<td>Introduction to Biology</td>
<td>3</td>
</tr>
<tr>
<td>Biol 101L</td>
<td>Introduction to Biology Lab</td>
<td>1</td>
</tr>
</tbody>
</table>

The student must earn B or better in the following courses to be admitted in the program.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMed 101</td>
<td>Orientation to Athletic Training</td>
<td>1</td>
</tr>
<tr>
<td>FMed 207</td>
<td>Prevention and Care of Athletic Injuries</td>
<td>2</td>
</tr>
<tr>
<td>FMed 207L</td>
<td>Prevention and Care of Athletic Injuries</td>
<td>1</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPER 310</td>
<td>First Aid and CPR</td>
<td>2</td>
</tr>
</tbody>
</table>

Core Courses

The following core courses are required for BS in Athletic Training:

** indicates course satisfies General Education Requirements.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chem 109</strong></td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td><strong>Comm 161</strong></td>
<td>Fundamentals of Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td><strong>CSci 101</strong></td>
<td>Introduction to Computer Science</td>
<td>3</td>
</tr>
<tr>
<td><strong>CSci 101L</strong></td>
<td>Introduction to Computer Science Lab</td>
<td>1</td>
</tr>
<tr>
<td><strong>Engl 101</strong></td>
<td>English Composition I</td>
<td>3</td>
</tr>
<tr>
<td><strong>Engl 102</strong></td>
<td>English Composition II</td>
<td>3</td>
</tr>
<tr>
<td><strong>OT 205</strong></td>
<td>Medical Terminology</td>
<td>1</td>
</tr>
<tr>
<td><strong>Phys 101</strong></td>
<td>Physics I</td>
<td>4</td>
</tr>
<tr>
<td><strong>Phys 102</strong></td>
<td>Physics II</td>
<td>4</td>
</tr>
<tr>
<td><strong>Psy 241</strong></td>
<td>Statistics for Behavioral Science</td>
<td>4</td>
</tr>
<tr>
<td><strong>Pxy 251</strong></td>
<td>Developmental Psychology</td>
<td>4</td>
</tr>
<tr>
<td><strong>Soc 101</strong></td>
<td>Introduction to Sociology</td>
<td>3</td>
</tr>
<tr>
<td><strong>Arts &amp; Humanities</strong></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td>13</td>
</tr>
</tbody>
</table>

Professional Courses

The following are essential professional courses to become an entry-level athletic trainer:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anat 204</td>
<td>Anatomy for Paramedical Personnel</td>
<td>4</td>
</tr>
<tr>
<td>Anat 204L</td>
<td>Anatomy Lab for Ath. Tr. Students</td>
<td>1</td>
</tr>
<tr>
<td>FMed 208</td>
<td>Procedures in Athletic Training</td>
<td>1</td>
</tr>
<tr>
<td>FMed 208L</td>
<td>Laboratory Procedures in Athletic Training</td>
<td>1</td>
</tr>
<tr>
<td>FMed 209</td>
<td>Understanding Medicine</td>
<td>3</td>
</tr>
<tr>
<td>FMed 213</td>
<td>Beginning Practicum</td>
<td>2</td>
</tr>
<tr>
<td>FMed 312</td>
<td>Medical Aspects of Sports</td>
<td>2</td>
</tr>
<tr>
<td>FMed 313</td>
<td>Intermediate Practicum</td>
<td>2</td>
</tr>
<tr>
<td>FMed 320</td>
<td>Athletic Training Modalities</td>
<td>2</td>
</tr>
<tr>
<td>FMed 321</td>
<td>Athletic Training Rehabilitation Techniques</td>
<td>2</td>
</tr>
<tr>
<td>FMed 321L</td>
<td>Laboratory Athletic Training Rehab Tech</td>
<td>1</td>
</tr>
<tr>
<td>FMed 343</td>
<td>Organizational Admin. in Athletic Training</td>
<td>2</td>
</tr>
<tr>
<td>FMed 413</td>
<td>Advanced Practicum</td>
<td>3</td>
</tr>
<tr>
<td>FMed 481</td>
<td>Athletic Injury Assessment</td>
<td>4</td>
</tr>
<tr>
<td>FMed 482</td>
<td>Internship in Athletic Training</td>
<td>3</td>
</tr>
<tr>
<td>FMed 495</td>
<td>Seminar in Athletic Training</td>
<td>2</td>
</tr>
<tr>
<td>N&amp;D 240</td>
<td>Fundamentals of Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HPER 332</td>
<td>Biomechanics</td>
<td>4</td>
</tr>
<tr>
<td>HPER 402</td>
<td>Exercise Physiology</td>
<td>4</td>
</tr>
<tr>
<td>HPER 403</td>
<td>Health Education</td>
<td>2</td>
</tr>
<tr>
<td>Phtx 402</td>
<td>Principles of Pharmacology and Toxicology</td>
<td>2</td>
</tr>
<tr>
<td>Phtx 410</td>
<td>Drugs Subject to Abuse</td>
<td>2</td>
</tr>
<tr>
<td>Phy 301</td>
<td>Human Physiology</td>
<td>4</td>
</tr>
<tr>
<td>Phy 413</td>
<td>Pharmacology</td>
<td>4</td>
</tr>
</tbody>
</table>

Courses


200. 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. 1 credit. 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 sports health 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 students to get practical experiences in injury management, modality usage and record keeping skills taught in FMed 208.

213. Beginning Clinical Practicum in Athletic Training. 1 credit. Prerequisites: FMed 208, 208L. A clinical course designed to allow the student to develop specified clinical competencies in a directed progressive manner. S

310. Interimship in Athletic Training. 3 credits. Prerequisite: FMed 320. An in-depth study in a subject area selected by the student under the supervision of an instructor. Advanced work in athletic training to include surgical and conservative injury management, rehabilitation and injury. F

312. Medical Aspects of Sports. 2 credits. Prerequisite: Permission of instructor. A course designed to introduce students to various medical specialities and medical problems and their effects on athletic participation. F

311. Intermediate Clinical Practicum in Athletic Training. 2 credits. Prerequisite: FMed 481. Corequisites: FMed 320, 321L. A clinical course designed to allow the students to develop specified clinical competencies in a directed progressive manner. S

320. Athletic Training Modalities. 2 credits. Prerequisite: FMed 481. A course designed to present the theoretical and applied principles anf techniques for the application of modalities in sports injury care. S

321. Athletic Training Rehabilitation Techniques. 2 credits. Prerequisite: FMed 481. A clinical course designed to allow the students to develop specified clinical competencies in a directed progressive manner. S

321L. Laboratory Athletic Injury Rehabilitation Techniques. 1 credit. Prerequisite: FMed 481. Corequisite: FMed 321. A course designed to allow students practical skill development of rehabilitation techniques utilized in athletic injury care as taught in FMed 321. S

343. Organizational Administration of Athletic Training. 2 credits. Prerequisite: Senior standing or consent of the instructor. A course designed to acquaint students with the theories and principles of administration. Administrative functions as they relate to the athletic trainer will be explained. S

413. Advanced Clinical Practicum in Athletic Training. 3 credits. Prerequisite: FMed 313. A clinical course designed to allow the students to develop specified clinical competencies in a directed progressive manner. S

418. Athletic Injury Assessment. 4 credits. Prerequisite: FMed 213. A course designed to instruct the students in the theories and skills of injury evaluation. F

419. Internship in Athletic Training. 3 credits. Prerequisite: FMed 313. Off campus athletic training experience designed to expose the student to alternate concepts of care. Repeatable up to 6 credits with instructor permission. F,S, SU

490. Directed Studies in Sports Medicine. 1-4 credits. (Repeatable to maximum of 6 credits.) Prerequisites: Upper level status in athletic training or other allied health field. PT students, fourth year medical students, or instructor permission. An in-depth study in a subject area selected by the student under the supervision of an instructor. F,S, SU

**Finance (Fin)**

T. Nelson (Chair), Escarraz, Lee, Markovich, and Potter

The Department of Finance offers a major in Financial Management, which covers the areas of managerial finance, investments, real estate, and insurance. The focus of managerial finance is internal to the
enterprise with particular emphasis on problem-solving in small and medium sized firms and entrepreneurial enterprises. In portfolio and investment management courses, students are familiarized with the perspective of external investors considering securities of enterprises for inclusion in portfolios. Real estate courses expand the scope of the program to include real property analysis and investments. Insurance courses expand the risk management function to include a variety of insurance contracts. The Financial Management major has been designed to give students an appropriate balance between general background knowledge and particular decision-making skills. Foundation courses cover modern finance theory and modeling using information technologies and databases. Particular decision-making skills are developed through case analyses. Upon completion of the Financial Management major, students are prepared for careers as financial managers, investment analysts, real property analysts, financial planners and a variety of sales careers in firms marketing stocks, bonds, options, real estate and insurance.

**B.B.A. WITH MAJOR IN FINANCIAL MANAGEMENT**

**Required 125 hours, including:**

I. General Education Requirements, see pages 27-30.
II. The College of Business and Public Administration Requirements, see page 39.
III. The Following Curriculum (suggested sequence)

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester</td>
<td></td>
</tr>
<tr>
<td>Engl 101</td>
<td>Composition I (3)</td>
</tr>
<tr>
<td>One of the Following:</td>
<td></td>
</tr>
<tr>
<td>Prey 101</td>
<td>Introduction to Psychology (3)</td>
</tr>
<tr>
<td>Soc 101</td>
<td>Introduction to Sociology (3)</td>
</tr>
<tr>
<td>or Anth 171</td>
<td>Introduction to Cultural Anthropology (3)</td>
</tr>
<tr>
<td>Psci 101</td>
<td>American Government I (3)</td>
</tr>
<tr>
<td>Math 104</td>
<td>Finite Mathematics (3)</td>
</tr>
<tr>
<td>Second Semester</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 102*</td>
<td>Composition II (3)</td>
</tr>
<tr>
<td>or Engl 209*</td>
<td>Technical and Business Writing (3)</td>
</tr>
<tr>
<td>Comm 101</td>
<td>Fundamentals of Public Speaking (3)</td>
</tr>
<tr>
<td>Math 204*</td>
<td>Survey of Calculus (3)</td>
</tr>
<tr>
<td>or Lab Science</td>
<td>Lab Science (4)</td>
</tr>
<tr>
<td>or Arts &amp; Humanities</td>
<td>Arts &amp; Humanities (3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>First Semester</td>
<td></td>
</tr>
<tr>
<td>Acc 200</td>
<td>Elements of Accounting I (3)</td>
</tr>
<tr>
<td>Acc 315</td>
<td>Business in the Legal Environment (3)</td>
</tr>
<tr>
<td>Econ 201*</td>
<td>Principles of Microeconomics (3)</td>
</tr>
<tr>
<td>Econ 210*</td>
<td>Introduction to Business and Economic Statistics (3)</td>
</tr>
<tr>
<td>or Art 198*</td>
<td>Arts and Humanities (3)</td>
</tr>
<tr>
<td>Second Semester</td>
<td></td>
</tr>
<tr>
<td>Acc 210*</td>
<td>Elements of Accounting II (3)</td>
</tr>
<tr>
<td>BVED 217</td>
<td>Fundamentals of Management Information Systems (4)</td>
</tr>
<tr>
<td>Econ 202*</td>
<td>Principles of Macroeconomics (3)</td>
</tr>
<tr>
<td>or Art 198*</td>
<td>Arts and Humanities (3)</td>
</tr>
</tbody>
</table>

| Junior Year |         |
| First Semester |         |
| Acc 301*      | Intermediate Accounting I (4) |
| Mgmt 300      | Principles of Management (3) |
| Mkt 301*      | Principles of Marketing (3) |
| Fin 310L*     | Problems in Financial Management (1) |
| Fin 321       | Real Estate Finance and Investment (3) |
| Second Semester |         |
| Mgmt 301*     | Production Management (3) |
| Fin 340*      | Capital Market Theory (3) |
| Fin 350*      | Financial Data Inputs: Analysis and Interpretation (3) |
| Fin 360       | Capital Market Financing and Investment Strategies (3) |
| Econ 303*     | Money and Banking (3) |
| Senior Year |         |

| First Semester |         |
| Fin 410*       | Cases in Managerial Finance (3) |
| Fin 420*       | Investment Analysis and Portfolio Management (3) |
| Elective in Financial Management Major | (3) |

Second Semester

<table>
<thead>
<tr>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fin 430*</td>
</tr>
<tr>
<td>Mgmt 475*</td>
</tr>
<tr>
<td>Elective in Financial Management Major</td>
</tr>
</tbody>
</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: Actc 302, 312; Econ 308, 309, 310, 311, 324, Fus 320, 323, 324, 380, 491, 492; Mgmt 310. The remaining 3 semester hours of electives to meet the 125 total semester hour requirement are not restricted.

**Courses**

210. Personal Financial Management, 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

220. Personal Investing, 3 credits. Investment concepts for individual investors who are, or will be, actively developing and monitoring their own investment portfolios. 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

310. Principles of Financial Management, 2 credits. Prerequisites: Accct 201, BVED 217, Ecom 210. Corequisite: Fin 300L. 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


320. Principles of Real Estate, 3 credits. Principles of real property ownership and transfer, contracts, types of deeds, leases, restrictions, real estate brokerage, property management, land utilization, 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

322. Real Estate Law, 3 credits. Judicial structure; legal procedures; sources of real estate law; estate and fixtures; proof of title; closing, deeds; mortgages; landlord-tenant; civil-rights; zoning, 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,S

330. Principles of Risk Management and Insurance, 3 credits. Description of industry structure and regulation. Introductory coverage of risk management, life and health insurance, property and liability insurance, social insurance, F,S

337. Cooperative Education, 1.6 credits. May be repeated to a total of 12 credits. Prerequisites: Accct 200, 201; BVED 217, Ecom 201, 202, and 210; approval of Department Chairperson. On-the-job compensated work experience in various areas of Finance. SU grading only. F,S

340. Capital Market Theory, 3 credits. Prerequisite: Fin 310. Restricted to Financial Management and Banking and Financial Economics majors. 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


360. Capital Market Financing and Investment Strategies, 3 credits. Covers analysis and procedures for implementing particular financing and investment plans in financial markets. Includes financial markets, bond evaluation, pension funds, venture capital sources, insurance companies, limited partnerships, S,F

381. Internship in Finance, 3-6 credits. Repeatable to 12 credits. Prerequisites: Accct 200, 201, BVED 217, Ecom 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. SU grading only. F,S,SS

418. Cases in Managerial Finance, 3 credits. Prerequisites: Fin 340 and Fin 350. Students receive training in financial management decision models. Includes working capital management, capital budgeting, cost of capital structure planning, dividend policy, mergers, valuation. Cases are used to show how finance theory serves as a guide to decision makers. F,S

419. Investment Analysis and Portfolio Management, 3 credits. Prerequisites: Fin 340 and Fin 350. 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 multinational investment management and related financing problems, taxation, working capital management. F,S

460. Managing Financial Institutions. 3 credits. Prerequisite: Fin 360. Principles of asset/liability and portfolio management as they apply to the balance sheet 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. Restricted to Financial Management and Banking and Financial Economics majors. 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 department. Designed for students with an interest in finance topics not covered in regularly scheduled courses. F,S

Fine Arts (FA)

The College of Fine Arts and Communication as such has only two course numbers, all its other course offerings being listed under its departments: Music, School of Communication, Theatre Arts and Visual Arts. The following inter-arts courses are non-departmental and may be used in partial fulfillment of the requirements for the degree of Bachelor of Music or Bachelor of Fine Arts.

Courses

150. Introduction to the Fine Arts. 3 credits. Preparatory presentations and discussion sessions combined with attendance at a variety of campus arts events to provide understanding and appreciation of the fine arts and their importance to the individual and the community. F,S

495. Symposium in the Arts. 1-3 credits. Workshops and seminars in various specialized topics relating to the fine arts. Course varies with topic selected. May be repeated for credit up to 10 hours. On demand.

Geography (Geog)

P. Todhunter (Chair), Anderton, Goodman, Hammen, Hemmisa, Munski, and Seidel

The Department of Geography offers major and minor programs in the College of Arts and Sciences. The Geography major can provide a traditional liberal arts education, or preparation for a career as a professional geographer. The principal programs of study include human geography, physical geography, regional geography, geographic education and geographic techniques. An undergraduate specialization in community and urban development can be designed, in consultation with an advisor, which provides the background 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 doctoral study or for a professional career in government, industry, or education in a wide variety of fields related to rural 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, 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 and laboratory and a well equipped laboratory for 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 and Climatic Data Center for information related to the northern Plains.

College of Arts and Sciences

B.S. WITH A MAJOR IN GEOGRAPHY

Required: 125 hours including:

I. General Education Requirements, see pages 27-30.

II. One of the following options:

Option 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.

36 major hours including:

Required (13 credits):

Geog 121/121L .................................. Physical Geography and Lab .................(4)
Geog 151 .................................. Human Geography ..................................................(3)
Geog 161 .................................. World Regional Geography .................(3)
Geog 377 .................................. Quantitative Applications in Geography ....(2)
Geog 377L .................................. Spatial Analysis Laboratory ..................(1)
Core Electives (6-7 credits) from:

Geog 271 .................................. Map Use and Interpretation .................(3)
Geog 275 .................................. Remote Sensing of the Environment .............(3)
Geog 373 .................................. Graphics and Air Photo Interpretation ..........(3)
Geog 373L .................................. Air Photo Interpretation Laboratory .............(1)
Geog 471 .................................. Cartography and Computer-Assisted Mapping ......(1)
Geog 471L .................................. Computer Mapping Laboratory ..................(1)
Geog 474 .................................. Introduction to GIS ............................................(3)

General Electives (16-17 credits):

Electives must include a minimum of one course from each of the disciplines of human geography, physical geography, and regional geography.

Option 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.

36 major hours including:

Required (20 credits):

Geog 121/121L .................................. Physical Geography and Lab .................(4)
Geog 151 .................................. Human Geography ..................................................(3)
Geog 161 .................................. World Regional Geography .................(3)
Geog 377 .................................. Quantitative Applications in Geography ....(2)
Geog 377L .................................. Spatial Analysis Laboratory ..................(1)
Geog 471 .................................. Cartography and Computer-Assisted Mapping ......(1)
Geog 471L .................................. Computer Mapping Laboratory ..................(1)
Geog 474 .................................. Introduction to GIS ............................................(3)

Core Electives (10 credits) from:

Geog 152 .................................. Economic Geography ............................................(3)
Geog 373 .................................. Graphics and Air Photo Interpretation .............(3)
Geog 373L .................................. Air Photo Interpretation Laboratory .............(1)
Geog 452 .................................. Location of Economic Activity .................(3)
Geog 453 .................................. Historical Geography ............................................(3)
Geog 454 .................................. Political Geography ............................................(3)
Geog 457 .................................. Urban Geography and Planning ..................(3)

General Electives (6 credits from):

Geog 271 .................................. Map Use and Interpretation .................(3)
Geog 300 .................................. ST: Transportation Geography .................(3)
Geog 300 .................................. ST: Rural Economic Development .................(3)
Geog 322 .................................. Natural Hazards ............................................(3)
Geog 354 .................................. Conservation of Resources .........................(3)
Geog 356 .................................. Geography of North America I .................(3)
Geog 362 .................................. Geography of Canada ............................................(3)
Geog 369 .................................. Geography of North Dakota .........................(3)
Geog 462 .................................. Geography of North American II .................(3)
Geog 463 .................................. Regional Geography: Middle East .................(3)

Option C: Environmental Geography Emphasis

This program provides an overview of geography as well as 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 government, industry, or education in a wide variety of environmentally-related fields.
36 major hours including:

Required (20 credits):

Geog 121/121L .......... Physical Geography and Lab ...........................................(4)
Geog 134/134L .......... Introduction to Global Climate and Lab ...........................................(4)
Geog 151 .......... Human Geography ..............................................................................(3)
Geog 354 .......... Conservation of Resources ..................................................................(3)
Geog 377 .......... Quantitative Applications in Geography .............................................(2)
Geog 377L .......... Spatial Analysis Laboratory ...............................................................(1)
Geog 474 .......... Introduction to GIS ..............................................................................(3)

Core Electives in Geography (10 credits from):

Geog 271 .......... Map Use and Interpretation .................................................................(3)
Geog 275 .......... Remote Sensing of the Environment .....................................................(3)
Geog 300 .......... SF Field Methods in Geography ..............................................................(3)
Geog 301 .......... SF Soils Geography .................................................................................(3)
Geog 322 .......... Natural Hazards ......................................................................................(3)
Geog 334/334L .......... Climatology and Lab .................................................................(4)
Geog 354 .......... Graphics and Air Photo Interpretation ....................................................(3)
Geog 373L .......... Air Photo Interpretation Laboratory ..................................................(1)
Geog 421 .......... Seminar in Physical Geography ..............................................................(3)
Geog 422 .......... Geography of Water Resources ..............................................................(3)
Geog 471 .......... Cartography and Computer-Assisted Mapping ....................................(3)
Geog 471L .......... Computer Mapping Laboratory .............................................................(1)
Geog 475 .......... Digital Image Processing .......................................................................(3)

Required in other departments (12)

Any combination of courses from the following fields: Biology, Chemistry, Computer Science, Geology, Math, and Physics.

Option D: Geographic Education Emphasis

This program provides a comprehensive background in geography. It is designed to prepare the student with the geography education necessary for a secondary school teaching career.

Students seeking secondary certification in Geography must complete the Department of Teaching and Learning requirements in Secondary Education on page 148 of the 1997-99 UND Undergraduate & Graduate Catalog. Formal admission to Teacher Education is normally sought while enrolled in T&L 200. Geography majors seeking secondary certification must have an advisor in the Department of Geography and in the Department of Teaching and Learning.

36 major hours including:

Geog 121/121L .......... Physical Geography and Lab .................................................(4)
Geog 151 .......... Human Geography ..............................................................................(3)
Geog 161 .......... World Regional Geography .................................................................(3)
Geog 271 .......... Map Use and Interpretation .................................................................(3)
Geog 319 .......... Geography for Teachers ...............................................................(2)
Geog 337 .......... Conservation of Resources .................................................................(3)
Geog 377 .......... Quantitative Applications in Geography .............................................(2)
Geog 377L .......... Spatial Analysis Laboratory ...............................................................(1)
for an acceptable statistics course in Business, Education, Psychology or Sociology

Topical Electives (9 credits from):

Geog 134/134L .......... Introduction to Global Climate and Lab ...........................................(4)
Geog 152 .......... Economic Geography ...........................................................................(3)
Geog 322 .......... Natural Hazards ......................................................................................(3)
Geog 421 .......... Seminar in Physical Geography ..............................................................(3)
Geog 422 .......... Geography of Water Resources ..............................................................(3)
Geog 452 .......... Location of Economic Activity ...............................................................(3)
Geog 453 .......... Historical Geography ...........................................................................(3)
Geog 455 .......... Political Geography ................................................................................(3)
Geog 457 .......... Urban Geography and Planning ..............................................................(3)
Geog 471 .......... Cartography and Computer-Assisted Mapping ....................................(3)
Geog 471L .......... Computer Mapping Laboratory .............................................................(1)
Geog 491 .......... Geography Awareness Week Practicum ................................................(1)
Geog 491 .......... Geography Fair Practicum ......................................................................(1)

Regional Electives (6 credits from):

Geog 262 .......... Geography of North America I ..............................................................(3)
Geog 362 .......... Geography of Canada ..............................................................................(3)
Geog 369 .......... Geography of North Dakota ....................................................................(3)
Geog 463 .......... Regional Geography: Middle East .........................................................(3)

MINOR IN GEOGRAPHY

Required 20 hours including:

Geog 121 .......... Physical Geography ..............................................................................(3)
Geog 134L .......... Physical Geography Laboratory .............................................................(1)
Geog 151 .......... Cultural Geography ................................................................................(3)
Geog 161 .......... World Regional Geography .................................................................(3)
Geog 271 .......... Map Use and Interpretation .................................................................(3)

Students must choose a minimum of 10 credits from one or a combination of the following concentrations, selected with approval of a geography advisor.

1. Human Geography:

Geog 152 .......... Economic Geography .............................................................................(3)
Geog 300 .......... Special Topics: Transportation .................................................................(3)
Geog 300 .......... Special Topics: Rural Economic Development .......................................(3)

Geog 354 .......... Conservation of Resources ..................................................................(3)
Geog 452 .......... Location of Economic Activity ...............................................................(3)
Geog 453 .......... Historical Geography .............................................................................(3)
Geog 455 .......... Political Geography .................................................................................(3)
Geog 457 .......... Urban Geography and Planning ..............................................................(3)

2. Physical Geography:

Geog 134 .......... Introduction to Global Climate .............................................................(3)
Geog 134L .......... Introduction to Global Climate Laboratory ............................................(4)
Geog 322 .......... Natural Hazards ......................................................................................(3)
Geog 334 .......... Climatology .........................................................................................(4)
Geog 354 .......... Conservation of Resources ..................................................................(3)
Geog 421 .......... Seminar in Physical Geography ..............................................................(3)
Geog 422 .......... Geography of Water Resources ..............................................................(3)

3. Regional Geography:

Geog 262 .......... Geography of North America I ..............................................................(3)
Geog 362 .......... Geography of Canada ..............................................................................(3)
Geog 369 .......... Geography of North Dakota ....................................................................(3)
Geog 462 .......... Geography of North America II ..............................................................(3)
Geog 463 .......... Regional Geography: Middle East .........................................................(3)

4. Geographical Techniques:

Geog 271 .......... Map Use and Interpretation .................................................................(3)
Geog 275 .......... Remote Sensing of the Environment .....................................................(3)
Geog 373 .......... Graphics and Air Photo Interpretation ....................................................(3)
Geog 373L .......... Photo Interpretation Laboratory ............................................................(1)
Geog 377 .......... Quantitative Applications in Geography .............................................(2)
Geog 377L .......... Spatial Analysis Laboratory ...............................................................(1)
Geog 471 .......... Cartography and Computer-Assisted Mapping ....................................(3)
Geog 471L .......... Computer Mapping Laboratory .............................................................(1)
Geog 475 .......... Remote Sensing Application and Analysis ...........................................(3)

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, 152, 161, 262, 354, and 457.

121. Physical Geography, 3 credits. A study of the pattern of distribution of the physical elements of man’s environment. The origin and characteristics of the terrestrial grid, earth-space relations, climate, landforms, vegetation, and soils. F,S,SS

121L. Physical Geography Laboratory, 1 credit. Corequisite or Prerequisite: Geog 121. A basic physical geography laboratory to complement Geography 121, F,S,SS

134. Introduction to Global Climate, 3 credits with an optional 1 credit lab. 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

134L. Introduction to Global Climate Laboratory, 1 credit. Optional lab for geography 134. A basic physical science laboratory focused upon specific atmospheric climatic phenomenon; wet and dry lab experiments, plus written lab exercises. 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

152. Economic Geography, 3 credits. The geographical basis for the production, exchange, and consumption of the earth’s resources and the relationships involved with people engaged in economic activity. F

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. Development of the United States and Canada which stresses changing cultural landscapes and assessing impacts of planning for resource utilization. F

271. Map Use and Interpretation, 3 credits. Map Use and Interpretation will cover basic map elements like map scale and projection, and introduce students to the design and construction techniques of thematic maps. It will give students an understanding of maps and their usefulness, and it will also serve as the foundation course for further study of cartography. S

275. Remote Sensing of the Environment, 3 credits. The study of current optical, infrared, and microwave methods for the remote observation of the earth. Aircraft and satellite data are examined as sources of information for evaluating environmental and resource problems. F

300. Special Topics in Geography, 1-4 credits. Topic of course will change from semester to semester but will typically emphasize recent developments in geography. F

319. Geography for Teachers, 2 credits. Geographical concepts and basic philosophy 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. An overview of the field of natural hazards emphasizing hazard assessment, human vulnerability, and mitigation. F

334. Climatology, 4 credits. Prerequisite: Geol 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,Z

337. Cooperative Education, 6 credits. May be repeated to a maximum of 6 credits. Prerequisite: 60 credits completed, minimum G.P.A. of 2.75. A practical work
experience with an employer closely associated with geography. S-U grading only.
F.S.SS

354. Conservation of Resources, 3 credits. Geographic principles applied to the analysis of resources and their efficient utilization. Emphasis is on properly balanced development. F

362. Geography of Canada, 3 credits. A regional and topical analysis of the physical, cultural and economic features of Canada. S.SS

369. Geography of North Dakota, 3 credits. An analysis of the development and distribution of the physical, cultural and economic characteristics of the state. S

373. Graphics and Air Photo Interpretation, 3 credits. Co-requisite: Geog 373L. Advanced techniques used in the compilation of maps and the cartographic presentation of data. Interpretation of aerial photographs, remote sensing, cartograms, geographic diagrams, and topographic quadrangles. Introduction to procedures utilized by governmental mapping agencies and private sector cartographic firms. S

373L. Air Photo Interpretation Laboratory, 1 credit. Co-requisite: Geog 373. A systematic coverage of laboratory techniques used in interpretation of aerial photographs. Emphasis is on direct experience with optical/mechanical instruments used in photo interpretation and on developing skills in data extraction from aerial photos. S

375. Quantitative Applications in Geography, 2 credits. Prerequisite: Math 103 or consent of instructor. Application of statistical and mathematical techniques to research topics in geography. F

377L. Spatial Analysis Laboratory, 1 credit. Prerequisite: Math 103. Corequisite: Geog 377. Practical applications of spatial analysis, including solutions to geometric and topological problems for geographic problems. Students work on projects which involve solving problems by spatial-oriented computations. Use of relevant statistical programs on computers are emphasized. F

421. Seminar in Physical Geography, 3 credits. Prerequisites: Geog 334, or consent of instructor. A topic selected from hydrogeography, drought, climate change, applied climatology, and conservation is examined. S

422. Geography of Water Resources, 3 credits. Prerequisites: Geog 121 or Geol 101. A geographical perspective on water resources issues in various regions of the United States. Water distribution and use, water quality, drainage basin management, land use hydrology, floods, and drought will be examined. F/S

452. Location of Economic Activity, 3 credits. Development of economic geography with an emphasis on location theory as applied to research in the discipline. S

453. Historical Geography, 3 credits. An examination of the relationships between the physical environment, the cultural patterns of settlement, andsequent occupation. F

455. Political Geography, 3 credits. A geographic approach to the patterns of power and conflicts among nations. Consideration of regional blocks, strategic areas, disputed zones, and the dynamic impact of technology. On demand

457. Urban Geography and Planning, 3 credits. An analysis of urban settlement patterns and the spatial interaction involved in intra-city, inter-city, and city-hinterland relationships including current urban geography theory and urban planning. S

462. Geography of North America II, 3 credits. Prerequisite: Geog 262 or consent of instructor. A regional and topical analysis of the physical, cultural and economic features of a selected region or group of regions within North America. F

463. Regional Geography, 2-3 credits. A regional and topical analysis of the physical and cultural features with emphasis on one continent or region. May be repeated up to nine credits provided different regions and approaches are involved. S

471. Cartography and Computer-Assisted Mapping, 3 credits. Corequisite: Geog 471L. Principles of graphic communication and skills for producing maps and charts using computer technology. It involves creating both geographic and attribute databases for graphic display of points, lines, areas, and surfaces. Data analysis, classing techniques, history of cartography, and projections are also discussed. S

471L. Computer Mapping Laboratory, 1 credit. Corequisite: Geog 471. Knowledge of computer operating systems and competency to use various mapping software packages to produce accurate and aesthetically pleasing maps and charts. Students implement projects and organize their finished products into a portfolio for presentation.F

474. Introduction to Geographic Information Systems (GIS), 3 credits. An introductory course which examines the nature of raster and vector data models and the analytical capabilities and products which they bring to bear on the solution of geographic problems. S

475. Digital Image Processing, 3 credits. Prerequisite: Geog 275. A course focused on the concepts and techniques involved in the use of digital remotely sensed data as they are applied to environmental monitoring and natural resource management. Emphasis is placed on algorithm development and "hands-on" application of digital techniques to select imagery. S

491. Directed Studies in Geographical Problems, 1-3 credits. Prerequisites: upper division status and consent of the instructor. May be repeated to a maximum of six credit hours. Designed for students who wish to explore advanced topics in Geography on an individual or small group basis. F.S.SS

Geology and Geological Engineering (Geol and GeoE)

Beaver, Forsman, Gerla, Ghassemi, Gosnold, Groenewold, Karner, Korom, LeFever, Matheney, Perkins, and Reid

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.

RESOURCES

The department is housed in Leonard Hall. Special facilities include the Water Quality Laboratory, Stable Isotope Geochemistry Laboratory, and microcomputer laboratory. The multidisciplinary Water Quality Laboratory is a joint endeavor linking several departments with interests in environmental aqueous chemistry and includes a gas chromatograph-mass spectrometer, an inductively coupled plasma-atomic emission spectrometer, an ion chromatograph, a computer workstation, and ancillary equipment. The Stable Isotope Geochemistry Laboratory includes computer-controlled Finnegan-MAT and V.G. Micromass isotope-ratio mass spectrometers together with high-vacuum sample-preparation lines for environmental isotopic analysis of waters, rocks and fossils. The microcomputer lab's Pentium-based machines are available for teaching and student research, and are connected to the School of Engineering and Mines token-ring network. The department also maintains a computerized x-ray diffraction laboratory, as well as an auger rig and a variety of field equipment for hydrogeology and other surficial investigations. Resources in geophysics include a LaCoste and Romberg Model G gravity meter, Leica System 300 GPS receivers, solar-powered weather stations, a divided-bar thermal conductivity apparatus, a high-precision temperature logging system, and a GeLi gamma ray spectrometer.

The North Dakota Geological Survey maintains the Wilson M. Laird Core and Sample Library, in a large adjacent laboratory, as the repository and research facility for all North Dakota oil-well, water-well and other drilling samples.

The F. D. Holland, Jr. Geology Library is a branch of the Chester Fritz University Library. It contains over 35,000 bound volumes and maintains subscriptions to more than 500 periodicals in geology and related subjects. It is also a repository for all U.S. Geological Survey publications and maps. Maps, aerial photographs and literature pertaining to geology around the world may be found here.

The Leonard Hall Museum contains a wide range of displays of regional interest, including displays of North Dakota and regional fossils, rocks and minerals, and glacial and other features.

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 Geology and Technology in the School of Engineering and Mines.
B.S. IN GEOLOGY

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. The Following Curriculum:

44 major hours, including:

- Geol 101: Introduction to Geology (3)
- Geol 101L: Introduction to Geology Laboratory (1)
- Geol 102: The Earth Through Time (3)
- Geol 102L: The Earth Through Time Laboratory (1)
- Geol 214: Structural Geology (3)
- Geol 311: Geomorphology (4)
- Geol 318: Mineralogy (3)
- Geol 320: Petrology (3)
- Geol 411: Sedimentology & Stratigraphy (5)
- Geol 415: Invertebrate Paleontology (4)
- Geol 420: The Evolving Earth (3)
- Geol 422: Seminar (1)
- Geol 356: Geoscience Lectures (2)

Field Geology (Summer, not available at UND) (5)

3 hours from:

- Geol 321: Geochimistry (3)
- Geol 414: Geophysics (3)
- Geol 417: Hydrogeology (3)

Required in other departments:

- Chem 105, 106: General Chemistry I, General Chemistry II and Qualitative Analysis (8)
- Engl 101: Composition I (3)
- *Engl 209: Technical and Business Writing (3)
- Engr 201: Fundamentals of Computer Programming (2)
- Math 211: Calculus I (4)
- Math 212: Calculus II (4)
- Math 203, 204: General Physics (8)

4 hours from:

- Math 213: Calculus III (4)
- Computer Science and/or Statistics (Econ 210, Psy 241, or Math 321) (8)

Additional hours required in science (including geology), computer science, statistics, engineering, mathematics, or a foreign language upon consultation with a departmental advisor (24)

*English 102 acceptable alternate course.

Teacher Certification

Students seeking secondary teacher certification in Geology must complete the Department of Teaching and Learning Requirements in Secondary Education on page 148. Students seeking certification should follow the curriculum for the B.S. in Geology and select Statistics (Econ 210, Psy 241, Math 321) rather than Math 213 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 advisor both in the Department of Geology and Geological 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 200 (see p. 148).

B.A. WITH MAJOR IN GEOLOGY

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. The Following Curriculum:

40 major hours, including:

- Geol 101: Introduction to Geology (3)
- Geol 101L: Introduction to Geology Laboratory (1)
- Geol 102: The Earth Through Time (3)
- Geol 102L: The Earth Through Time Laboratory (1)
- Geol 214: Structural Geology (3)
- Geol 311: Geomorphology (4)
- Geol 318: Mineralogy (3)
- Geol 320: Petrology (3)
- Geol 420: The Evolving Earth (3)
- Geol 422: Seminar (1)
- Geol 356: Geoscience Lectures (2)

Geology Electives (300 level and above) (13)

Required in other departments:

- Computer Science and/or Statistics (8)
- Chem 105, 106: General Chemistry I, General Chemistry II & Qualitative Analysis (8)
- Math 103: College Algebra (3)
- Math 105: Trigonometry (2)
- Phys 203, 204: General Physics (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)

Minor in Geology

Required: 20 hours including:

7-8 hours from:

- Geol 101: Introduction to Geology (3)
- Geol 101L: Introduction to Geology Laboratory (1)
- Geol 203: Geology for Engineers (3)
- Geol 102: The Earth Through Time (3)
- Geol 102L: The Earth Through Time Laboratory (1)
- Geol 103: Introduction to Environmental Issues (3)
- Geol 111: Views of the Earth and Planets (3)
- Geol 311: Geomorphology (4)
- Geol 322: Environmental Geology (3)

Remaining electives chosen from Geology courses numbered 214 or higher, not including 303 or 305.

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) geo-mechanics, 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, 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.

B.S. IN GEOLOGICAL ENGINEERING

Required 141 hours, including:

I. General Education Requirements, see pages 27-30.

II. The Following Curriculum:

- Geol 101: Calculus I (4)
- Chem 105: General Chemistry I (4)
- Engr 101: Engineering Graphics (2)
- *Chem 209: Technical and Business Writing (3)
- Math 210: Fund. of Computer Programming (2)
- Geol 203: Geology for Engineers (3)
- Engr 102: Descriptive Geometry (2)
- Chem 106: General Chem II and Qualitative Analysis (4)
- EE 206: Electrical Engineering Fundamentals (3)
- Phys 205: General Physics (4)
- CE 300: Analytical Mechanics (Statics) (2)
- Chem 320: Petrology (3)
- Eng 201: Fund. of Computer Programming (2)
- EE 206: Electrical Engineering Fundamentals (3)
- CE 305: Dynamics (3)
- Engr 209: Technical and Business Writing (3)
- Econ 201: Principles of Microeconomics (3)
- Geol 214: Structural Geology (3)

Arts and Humanities (see page 28) (5)
Junior Year

CEn 301 ..........Mechanics of Materials I .......... (3)
ME 341 ..........Thermodynamics .......... (3)
Geol 311 ..........Geology .......... (4)
Geol 411 ..........Sedimentology & Stratigraphy .......... (5)
GeoE 323 ..........Geological Engineering .......... (3)
Technical Elective* .......... (3)
Statistics Elective (Econ 210, Psy 241, or Math 321) .......... (3)
Arts and Humanities (See page 28) .......... (3)
CEn 412 ..........Soil Mechanics .......... (3)
Engr 306 ..........Fluid Mechanics .......... (3)

Summer

Field Geology (South Dakota School of Mines and Technology - Black Hills Field Station) .......... (5)

Senior Year

Geol 414 ..........Geophysics .......... (3)
Phil 370 ..........M & P: Ethics in Engineering .......... (3)
GeoE 417 ..........Hydrogeology .......... (3)
GeoE 455 ..........Geomathematics .......... (3)
GeoE 484 ..........Geological Engineering Design .......... (3)
CEn 413 ..........Soil Mechanics Laboratory .......... (2)
Engr 460 ..........Engineering Economy .......... (3)
Geol 422 ..........Seminar .......... (1)
Social Science (See page 27) .......... (3)
Arts and Humanities (See page 28) .......... (3)
Technical Elective* .......... (3)

*Technical Electives: 6 credits required from courses approved by Geological Engineering Curriculum Committee.

B.S. IN ENVIRONMENTAL GEOLOGY AND TECHNOLOGY

Required 125 hours, including:
I. General Education Requirements, see pages 27-30.
II. The following Core Curriculum (51 hours):
   Geol 101* ..........Introduction to Geology (or GeoE 203) .......... (3)
   Geol 101L* ..........Introduction to Geology Laboratory .......... (1)
   Geol 102* ..........The Earth Through Time .......... (3)
   Geol 102L* ..........The Earth Through Time Laboratory .......... (1)
   Geol 311 ..........Geomorphology .......... (4)
   Geol 318 ..........Mineralogy .......... (3)
   Geol 322 ..........Environmental Geology .......... (3)
   Geol 422 ..........Seminar .......... (1)
   GeoE 356 ..........Geoscience Lectures .......... (2)
   BioL 101* , 102* ..........Introduction to Biology .......... (6)
   BioL 102L , 102M ..........Introduction to Biology Laboratory .......... (2)
   Chem 105* ..........General Chemistry .......... (4)
   Engr 201 ..........Fundamentals of Computer Programming .......... (3)
   Econ 201* ..........Principles of Microeconomics .......... (3)
   Engl 101* ..........Composition I .......... (3)
   Engl 209* ..........Technical and Business Writing .......... (3)
   Geog 354* ..........Conservation of Resources .......... (3)
   Arts and Humanities (See page 27) .......... (1)

   *Fulfills U.N.D. General Education Requirements

One of the following options is required:
A. ENVIRONMENTAL STUDIES OPTION: 74 hours
   Required Courses (24 hours):
   Geol 214 ..........Structural Geology .......... (3)
   Biol 332 ..........General Ecology .......... (3)
   Comm 161 ..........Fundamentals of Public Speaking .......... (3)
   Comm 303 ..........Principles of Public Relations .......... (3)
   Math 103* ..........College Algebra .......... (3)
   Math 105* ..........Trigonometry .......... (2)
   Math 204 ..........Survey of Calculus (or CSci 260 or Econ 210) .......... (3)
   Phys 203 ..........General Physics .......... (4)
   Option Electives. 24 hours of course work directly related to degree. Must be approved by advisor .......... (24)
   General Electives (must meet General Education Requirements) .......... (26)

B. WATER RESOURCES OPTION: 74 hours
   Required Courses (41 hours):
   Geol 321 ..........Geochemistry .......... (3)
   GeoE 417 ..........Hydrogeology .......... (3)
   GeoE 418 ..........Hydrogeological Field Methods .......... (2)
   CSci 300 ..........Analytical Mechanics (Statics) .......... (2)
   Chem 106 ..........General Chemistry II and Qualitative Analysis (or Chem 153) .......... (4)
   Chem 212 ..........Organic Chemistry .......... (5)
   Econ 210 ..........Introduction to Business and Economic Statistics .......... (3)
   Math 211 ..........Calculus I .......... (4)
   Math 212 ..........Calculus II .......... (4)
   Math 213 ..........Calculus III .......... (4)
   ME 306 ..........Fluid Mechanics .......... (3)
   Phys 205 ..........General Physics .......... (4)
   Option Electives. 12 hours of course work directly related to degree. Must be approved by advisor .......... (12)
   General Electives (must meet General Education Requirements) .......... (21)

Courses

For Geology majors, a grade of C or better is required in Geology 318 before any other 300 or 400 numbered courses are taken.

100. Earth Science, 4 credits. The geologic aspects of earth science are covered. Geologic hazards, mineral and energy resources, and the significance of geology in the national parks and monuments are among the topics covered. This lecture-recitation course will fulfill part of the non-laboratory General Education Science requirement. F-S

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—minerals, 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 102B 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 exploration of Earth's resources. F-S

105. Selected Topics, 1-4 credits. Repeatable when topics vary. A special topic course intended for non-science majors. Subjects will include many interests of interest to non-geologists and non-scientists, such as earthquakes, evolution, gems, and the geology of National Parks. On demand.

111. Views of the Earth and Planets, 3 credits. An introduction to Earth and the Solar System. Coverage includes: the planets and their moons, comets, asteroids, impact craters, meteorites, the sun, the solar system's origin, planetary atmospheres, the living Earth, the question of life elsewhere. S

111R. Views of the Earth and Planets Recitation, 1 credit. Corequisite: Geol 111. A recitation-discussion to complement Geol 111. S

203 (GeoE). Geology for Engineers, 3 credits. Corequisites: GeoE 203L. Physical geology discussed from the engineering point of view. Required of students in civil/structural and geological engineering. Includes laboratory. F-S

214. Structural Geology, 3 credits. Prerequisites: Geology 101 or GeoE 203, and Geology 102 or consent of instructor; Mathematics 105. Mechanics of rock deformation, description of rock structures and tectonics. Includes laboratory. S

301 (GeoE). Mining Engineering, 3 credits. Prerequisites: Geology 101 or GeoE 203 and consent of advisor. Principles of natural resource extraction emphasizing: the role of metallic, nonmetallic, and energy minerals and mining in society; mineral exploration; mine design and planning for surface and underground extraction; environmental context; mine design, laws, regulations, permitting, and public perception; mine geology; surface and groundwater management; and mineral processing. Includes laboratory and field trip. S

302. (GeoE). Reclamation Engineering, 3 credits. Prerequisites: Geology 101 or GeoE 203 or consent of advisor. Principles of reclamation engineering; geology and hydrology 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: Geology 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: Geology 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. S

318. Mineralogy, 3 credits. Prerequisite: Geology 101 or GeoE 203, and Chem 105 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. F

320. Petrology, 3 credits. Prerequisite: Geology 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: Geology 318, Chem 106 and Math 212, 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, isotopic geochronology, 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 (GeoE). Engineering Geology, 3 credits. Prerequisites: One introductory geology course and Math 211, 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

337 (GeoE). 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. F,S,SS

351 (GeoE). Petroleum Development Engineering, 3 credits. Well spacing and location, drilling equipment and methods, fishing tools, casing, cementing, oil field exploration, and well completion. F

352 (GeoE). Petroleum Production Engineering, 3 credits. Well inflow performance, production tubing selection, oil and gas pipelines design, design of artificial-lift production system. F

356. Geologic Lectures, 1 credit. Students attend and evaluate departmental lectures given by visiting scientists and engineers, faculty, and students. May be repeated once. S-U grading. May not be taken concurrently with Geol 422. F,S

360 (GeoE). Subsurface Disposal of Liquid Wastes, 3 credits. Prerequisites: Geol 100 or 101, or Geol 203. Math 211 or consent of instructor. Introduction to geologic requirements for subsurface disposal of liquid wastes and design, operation, and maintenance of deep injection wells. S,S

401. Remote Sensing in Geology, 3 credits. Prerequisite: Geology 311 or consent of instructor. Use of remotely-sensed imagery to interpret geological structures, processes, and resources. Includes laboratory. S

405 (GeoE). Industrial Minerals, 3 credits. Prerequisite: Geology 320 or consent of instructor. Geology and utilization of industrial minerals. F

411. Sedimentology and Stratigraphy, 5 credits. Prerequisite: Geology 320. Origin, transportation, deposition, and diagenesis of sediments; principles and applications of stratigraphy. Includes field trip and laboratory. F

414. Geophysics, 3 credits. Prerequisites: Geology 101, Mathematics 213, Physics 204 or 206. Principles of various geophysical methods and their application to geologic problems. F

415. Invertebrate Paleontology, 4 credits. Prerequisite: Geology 102. Recommended for Biology 107 or 102. Major invertebrate groups preserved as fossils: stratigraphic and paleoecologic use; invertebrate relationships; independent study of fauna. Includes field trip and laboratory. F

417 (GeoE). Hydrogeology, 3 credits. Prerequisite: Math 212 or consent of instructor. Physical and chemical aspects of groundwater movement, supply, and contamination. F

418 (GeoE). Hydrogeological Methods, 2 credits. Corequisite: GeoE/Geol 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, ground water sampling and analysis. Includes field trip. F

419 (GeoE). Groundwater Monitoring and Remediation, 3 credits. Prerequisites: Math 212, GeoE/Geol 417 and a statistics course (Econ 210, Psy 241, Math 321 or 353). 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 treatment. S

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 underlying concepts. S

422. Seminar, 1 credit. Prerequisite: Senior or graduate status in departmental major. Preparation and delivery of oral presentations on research, engineering design project or other topic. Includes evaluation of departmental seminars and lectures. May not be taken concurrently with Geol 356. F

425 (GeoE). Design Hydrology for Wetlands, 3 credits. Prerequisites: Chem 105 and either CE/ME 306 or GeoE/Geol 417. Principles of chemistry, geology, hydrodraulics, and hydrology applied to natural and constructed wetlands and other small catchments. S

427 GeoE/GeoL. Groundwater Modeling, 3 credits. Prerequisites: GeoE/Geol 417, Math 213, some laboratory experience. Fundamentals of 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. Geological Survey's MODFLOW code. GeoE 427 requires a design oriented project appropriate for students in engineering. Alternatively, students in Geol 427 will complete a scientific modeling project. Credit may be received for completion of either Geol 427 or GeoE 427 but not both. F

450 (GeoE). Petroleum Reservoir Engineering, 3 credits. Prerequisites: Mathematics 213 and Physics 206 or consent of instructor. Darcy’s law, application of material balance equations to oil and gas reservoirs, pressure buildup and drawdown analysis. F

453 (GeoE). Explosives and Blasting Technology, 3 credits. Prerequisites: Consent of the instructor. Introduction to explosives and rock blasting; theory and application of explosives and blasting mechanics. Includes laboratory. F

458 (GeoE). Geomechanics, 3 credits. Prerequisites: GeoE 323 and CIV 412 or consent of instructor. Principles of geomechanics and its application to geological engineering. F

484 (GeoE). Geological Engineering Design, 3 credits. Prerequisites: Advanced level standing in Geological Engineering and consent of advisor. 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. F,SS

485 (GeoE). Geological Engineering Design, 4 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 422 Seminar. F,SS

490. Senior Thesis, 3 credits. Prerequisite: Senior status in departmental major; minimum 3.0 GPA in coursework required for major, and consent of instructor. Original student investigation of geological problem. Supervised by a faculty advisor. Results presented as departmental seminar. F,S

491. Geologic Problems, 1-4 credits. Prerequisites: Consent of instructor. May be taken one or more times for a total of 4 credits. Individualized or group study on selected geoscience topics. F,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 mine planning or operations. Includes laboratory if applicable. On demand.

Health, Physical Education, and Recreation (HPER)

R. Brinkert (Chair), D. Anderson, L. Anderson, Eklund, Humphries, Parker, Schroeder, Steen, Stiles, Von Duvillard, Watson, and Whitehead

The mission of the Department of Health, Physical Education, and Recreation is to offer challenging undergraduate and graduate programs. These programs aim to demonstrate excellence in three main areas:

A. The education of students, who upon graduation are noted for their knowledge, professional skill, and future marketability.

B. Scholarly and creative activity which contributes notably to the field of knowledge in HPER.

C. Contribution of the department’s particular expertise and talents to the service to the university community, the state, and the profession.

Graduates have the opportunity to pursue careers in physical education teaching, health and fitness education and management, athletic coaching, and recreation administration, therapeutic recreation, recreation leadership or to continue their education in graduate studies.

Basic Instruction Courses — The Department of HPER 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 HPER 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

I. UNDERGRADUATE PHYSICAL EDUCATION PROGRAM

The physical education program provides a major with a teacher education option or a major with a related area option.

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 1-12. The related area option is for those students who wish to find employment in the commercial fitness field.

101
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 hours, including:

I. General Education Requirements, see pages 27-30.

II. The College of Education and Human Development Requirements, see page 44.

III. Prerequisite courses, 19 hours including: (Some credits may be used to satisfy the General Education requirements.)

- Chem 104: Introductory Chemistry (4)
- Psy 101: Introduction to Psychology (3)
- Soc 101: Introduction to Sociology (3)
- Anat 204, 204L: Anatomy for Paramedical Personnel and Laboratory (5)
- Phy 301: Mechanics of Human Physiology (4)

IV. Required curriculum, 32 hours including:

- HPER 107: Motor Learning (4)
- HPER 223: Movement Performance and Analysis (12)
- HPER 276: Motor Learning (3)
- HPER 329: Biomechanics (4)
- HPER 401: Sport Sociology (3)
- HPER 402: Exercise Physiology (4)
- HPER 440: Sport Psychology (3)

V. One of the following options:

A. Teacher Education/Certification Option

Students seeking certification to teach physical education in grades 1-12 must complete the requirements for the B.S. in Physical Education and the Secondary Education requirements in the Department of Teaching and Learning. See page 148.

B. Minor in Recreation and Leisure Services

IV. Recreation and Leisure Services Major Core Requirements:

- HPER 203: Recreational Games (1)
- HPER 222: Program Planning in Recreation and Leisure (1)
- HPER 225: Program Planning in Recreation and Leisure (1)
- HPER 406: Strategies for Teaching and Leisure (3)
- HPER 487: Senior Teaching Seminar (1)

IV. Recreation and Leisure Services Major Core Requirements:

- HPER 203: Recreational Games (1)
- HPER 222: Program Planning in Recreation and Leisure (1)
- HPER 225: Program Planning in Recreation and Leisure (1)
- HPER 406: Strategies for Teaching and Leisure (3)
- HPER 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 page 148.

B. Related Areas 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 advisor.

**MINOR IN ATHLETIC COACHING**

Required 27 hours, including:

- HPER 109: Introduction to Coaching (1)
- HPER 207: Prevention & Care of Injuries (3)
- HPER 223: Movement Performance and Analysis (3)
- HPER 328: Introduction to Coaching (1)
- HPER 329: Biomechanics (3)
- HPER 325: Youth and Children in Sport (3)
- HPER 341: Organization & Administration of Athletics (2)
- HPER 423: Coaching Methods (2 hours each to coincide with sport specific HPER 223s) (6)
- HPER 486: Practicum in Coaching (2)

Students interested in a Minor in Athletic Coaching should consult with an advisor in Physical Education before beginning the Minor. This is necessary to ensure that courses are appropriately tracked toward the practicum.

**MINOR IN HEALTH EDUCATION**

Required 14 hours, including:

- HPER 310: First Aid & CPR (2)
- HPER 327: Fitness for Life (3)
- HPER 403: School Health Education (2)
- Psy 251: Developmental Psychology (4)
- N&L 249: Fundamentals of Nutrition (3)

and 7-10 hours to include one course from each of the following 3 groups:

- Psyc 235: Human Environment (2)
- Ger 103: Introduction to Environmental Issues (3)
- Psyc 250: Human Sexuality (3)
- T&L 252: Child Development (3)
- Soc 235: The Family (3)
- Psyc 340: Drugs and Society (3)
- Swk 410: Drugs: Addiction Dynamics (2)

Special topics and other courses may be substituted only with Physical Education advisor approval.

Students interested in a Minor in Health Education should consult with an advisor in Physical Education before beginning the Minor.

**B.S.E.D. WITH A COMBINED MAJOR IN ELEMENTARY AND PHYSICAL EDUCATION**

For curriculum outline see page 147 under the Department of Teaching and Learning.

**College of Education and Human Development**

**II. RECREATION AND LEISURE SERVICES PROGRAM**

The Recreation and Leisure Services Program offers the following areas of professional preparation:

A. Major in Recreation and Leisure Services

The major includes a specialization called an emphasis area.

The following are common emphasis areas:

- Outdoor Recreation
- Recreation Administration
- Therapeutic Recreation

B. Minor in Recreation and Leisure Services

**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 Psy 101, Soc 101 and Comm 161 are required for admission. Students interested in admission should consult with the Recreation and Leisure Services Program Director.

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. The College of Education and Human Development Requirements, see page 44.

III. Recreation and Leisure Service Prerequisites:

- Comm 161: Fundamentals of Public Speaking (3)
- Psy 101: Introduction to Psychology (3)
- Soc 101: Introduction to Sociology (3)

IV. Recreation and Leisure Services Major Core Requirements:

- HPER 203: Recreational Games (1)
- HPER 222: Program Planning in Recreation and Leisure (1)
- HPER 225: Program Planning in Recreation and Leisure (1)
- HPER 406: Strategies for Teaching and Leisure (3)
- HPER 487: Senior Teaching Seminar (1)

Total Hours: 125
V. Recreation and Leisure Services Emphasis Area (18 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, Prison Recreation, Tourism Administration, Commercial Recreation, and Therapeutic 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 NCTRC certification, it is intended to qualify to pass the certification exam. It is recommended that students interested in NCTRC certification become familiar with the requirements for that certificate.

The North Dakota Recreation and Park Association and the National Recreation and Park Association certify recreation and leisure services professionals as Certified Leisure Professionals (CLP). The CLP 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 CLP exam. Graduation with a B.S. in Recreation and Leisure Services does not guarantee CLP 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 hours, including:
HPER 201 ..........................Leisure and Society ...................................(3)
HPER 222 ..........................Programming in Recreation .............................(3)
HPER 360 ..........................Recreation/Leisure Services and Individuals with Disabilities ....................................(3)
HPER 385 ..........................Practicum in Recreation ....................................(2)
Elect 9 hours of Recreation and Leisure Services content courses in HPER as approved by a Recreation advisor.

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: HPER 101 in the same activity or consent of the instructor. Instruction in aquatics, dance, fitness, individual sports, team sports, and outdoor pursuits at the introductory level. F,S

103. Physical Education. 1 credit. Prerequisite: HPER 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

105. Exercise Physiology. 1 credit. Prerequisite: HPER 101 or 102. An overview of the effect of the type, intensity and duration of exercise on physiological function. S

107. Introduction to Physical Education. 3 credits. The nature and scope of physical education by means of a critical examination of sport, play, exercise and dance. Includes laboratory. 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. On demand.

110. Sports Officiating. 1 credit. Knowledge of the roles and techniques for officiating various sports. Offered by sport; credit is repeated in different sports. F,S

201. Leisure and Society. 3 credits. Prerequisite: Soc 101 and Psy 101. Orientation to recreation and leisure, including sociological, psychological, historical, philosophical and professional implications and influences of recreation and leisure on society.

203. Recreational Games. 1 credit. Prerequisite: HPER 201. Emphasis on a wide variety of recreational games. F,S


206. HPER Workshop. 1 credit. Each workshop will emphasize an area related to HPER. Course may be repeated as long as content varies. On demand.

207. 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

222. Program Planning in Recreation and Leisure. 3 credits. Development of programming skills for recreation programs in various settings, i.e. public, nonprofit profit with emphasis on activity selections, scheduling and staffing. S

223. Movement Performance and Analysis. 1 credit. Prerequisite: HPER 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 HPER majors. F,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,S

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. S

276. Motor Learning. 3 credits. Co-requisite: HPER 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.

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

321. Human Resources for Recreation. 3 credits. Prerequisites: HPER 201. The supervision of human resources for the leadership of recreation and leisure services. F

323. Introduction to Teaching in Physical Education and Sport Settings. 3 credits. Prerequisite: HPER 107 & 223. Corequisite: HPER 323L. Strategy for classroom management, planning, instruction, and assessment of teacher and student behavior. Special emphasis on systematic development of a variety of teaching skills through practice and feedback in individual and small group situations.

323L. Introduction to Teaching in Physical Education and Sport Settings Laboratory. 1 credit. Prerequisites: HPER 107 & 223. Corequisite: HPER 323. Supervised experiences in laboratory and field settings for the purpose of developing teaching skills for physical education and sport settings. On demand.

324. Sport Physiology. 3 credits. Analysis of research findings in exercise physiology and sports medicine with applications to coaching. 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.

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. Biomechanics. 4 credits. Prerequisite: Anat 204, 204L. The study of human movement with special emphasis on those movements related to sport and physical activity.

337. Cooperative Education HPER. 1-4 credits, repeatable to 16. Prerequisite: HPER 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. SAU grading only. F,S,SS

341. Organization and Administration of Athletics. 2 credits. Principles and practices for management of the interscholastic athletic program.

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.

359. Introduction to Therapeutic Recreation. 3 credits. Prerequisite: HPER 201. An overview of the nature and scope of therapeutic recreation by examination of the history, philosophy, service delivery systems and issues that constitute the profession. F

366. Recreational/Leisure Services and Individuals with Disabilities. 3 credits. Study of individuals with disabling conditions and their leisure-related needs with emphasis on integration strategies and legislation that facilitate community involvement.

361. Principles of Therapeutic Recreation. 3 credits. Prerequisite: HPER 359. In depth examination of the therapeutic recreation process in clinical, residential and community settings.

362. Leisure Education and Counseling. 3 credits. Prerequisites: HPER 201, 223. The value and meaning of leisure to the individual and the principles and practices of leisure education and counseling in a variety of leisure service settings.

363. Therapeutic Recreation for the Elderly. 3 credits. Prerequisite: HPER 361. Leisure-related needs of elderly individuals and strategies to meet those needs through the therapeutic recreation process in clinical, residential and community settings.

370. Principles of Tourism. 3 credits. Overview of tourism including travel behavior, tourism planning and policy, tourism impacts and promotion of tourism. F

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.

384. Practicum in Recreation. 2 credits. Prerequisites: HPER 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

400. Methods and Materials for Teaching Physical Education in the Secondary School. 3 credits. Prerequisites: HPER 106 and admission to Teacher Education. Corequisite: HPER 400L. Instructional skills and curriculum analysis for secondary school physical education. On demand.

400L. Methods and Materials for Teaching Physical Education in the Secondary School—Laboratory. 1 credit. Prerequisites: HPER 400L, and admission to Teacher Education. Corequisite: HPER 400. Supervised experiences in the secondary school for the purpose of developing teaching skills for physical education and sport settings. On demand.

401. Sport Sociology. 3 credits. Prerequisite: Soc 101. The critical exploration of the function of sports in American culture, in an interdisciplinary fashion, with a focus on the contemporary scene.

402. Exercise Physiology. 4 credits. Prerequisite: Phy 301. The acute and chronic effect of the type, intensity and duration of exercise on physiological function.

403. School Health Education. 2 credits. Provides prospective health educators with a cursory look at health curriculum construction and investigation of different methods, devices and classroom techniques.
404. Adapted Activities Program. 2 credits. Etiology of specific handicaps and adaptations of various activities which the individual may participate in at various grade levels. Theory and practical work will be emphasized. F

405. Organization and Administration of Intramural-Recreational Sports. 2 credits. Principles and practices for management of comprehensive school intramural-recreational sports programs. F

406. Strategies for Teaching Physical Education in the Elementary School. 3 credits. Prerequisites: 205, 323, and admission to Teacher Education. Corequisite: HPER 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—Laboratory. 1 credit. Prerequisites: HPER 323L, 205, and admission to Teacher Education. Corequisite: HPER 406. Supervised experiences in the elementary school for the purpose of developing teaching skills for physical education and sport settings. On demand.

415. Evaluation of Psychomotor Performance. 3 credits. The application of tests to measure and evaluate physical fitness, physique, body composition, sport skills and motor performance. Includes descriptive statistics for analyzing and interpreting measurements. F

421. Evaluation and Research for Recreation. 3 credits. Prerequisite: HPER 222. Overview of evaluation and research methods utilized in the delivery of recreation and leisure services. F

423. Coaching Methods. 2 credits. Prerequisite: HPER 222 in same sport.
Repeatable with different sports to a maximum of 10 credits. Methods employed in coaching specific sports. F

440. Sport Psychology. 3 credits. Prerequisite: Psy 101. Examination of psychological constructs influencing the competitive sport process and physical activity. S

442. Recreation Administration. 3 credits. Prerequisite: 321. An examination of theories and principles of administration of recreation and leisure services. F

450. Dance Production. 2 credits. Prerequisite: HPER 340 or consent of instructor. Group and individual experience in choreography and performance. Practical application of design theories for staging dance. On demand.

455. Special Topics in HPER. 1-4 credits repeatable to 9. Specialized topics related to physical education, health, and recreation. On demand.

460. Design and Administration of Therapeutic Recreation. 3 credits. Prerequisite: HPER 361 or permission of instructor. An examination of the systematic design and administration of therapeutic recreation programs. Emphasis is on principles of program planning, development of program objectives, program content, program evaluation, and management of program resources. F

470. Environmental Interpretation. 3 credits. The principles, methods, and materials of interpretive naturalist programs for recreational agencies. Emphasis is placed on obtaining practical experience in developing interpretive materials and programs. On demand.

479. Recreation Areas and Facilities. 3 credits. Prerequisite: HPER 321 or consent of instructor. Design and maintenance of recreation areas and facilities. Includes on-site visits. F

480. Field Experience in HPER. 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. 1-12 credits. Prerequisite: Recreational and Leisure Services or Physical Education majors only. Development of professional skills by working directly with established fitness/wellness, leisure, recreation and health and human service organizations under the supervision of professionals and faculty. S/U grading only. F/S,S,S

486. Practicum in Coaching. 2 credits. Prerequisite: HPER 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. Corequisite: CTL 487. A critical analysis of problems, professional obligations and careers in teaching physical education. F/S

495. Directed Study in Physical Education and Recreation. 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

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 want to pursue advanced work in history at the graduate level. 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 148), Option B satisfies the requirements for teacher certification in the Social Sciences. Prospective teachers should seek an advisor in the College of Education and Human Development in addition to their advisor in the History department.

**College of Arts and Sciences**

**B.A. WITH MAJOR IN HISTORY**

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. One of the following curriculum options:

Option A

35 major hours, including:

- 9 hours from: 
  - Hist 101 ............... Western Civilization to 1500. ..............(3)
  - Hist 102 ............... Western Civilization since 1500 .......(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 ................................(2)
  - Electives (16 must be upper level).........................(21)

Maximum 6 hours of Hist 300.

Required in other departments:

- Level IV proficiency in a foreign language.

Option B

35 major hours, including:

- 9 hours from: 
  - Hist 101 ............... Western Civilization to 1500. ..............(3)
  - Hist 102 ............... Western Civilization since 1500 .......(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 ................................(2)
  - Electives (16 must be upper level).........................(18)

Of the 18 elective hours 12 must form a concentration in either World or American History.

Maximum 6 hours of Hist 300.

Required in other departments:

- Anth 171 ............... Introduction to Cultural Anthropology ..........(3)
- Econ 105 ............... Elements of Economics ..................(3)
- Econ 420 ............... Economic Education .....................(3)
- Geog 161 ............... World Regional Geography .................(3)
- Geog 319 ............... Geography for Teachers ................(2)
- PSCI 101 ............... American Government I .................(3)
- PSCI 102 ............... American Government II ...............(3)
- Electives ....................(3)
- Hist 101 ..........................Western Civilization to 1500. ..............(3)
- Hist 102 ..........................Western Civilization since 1500 .......(3)
- Hist 103 ..........................United States to 1877. .................(3)
- Hist 104 ..........................United States since 1877 ..........(3)
- History electives (Maximum: 4 hrs Hist 300) .....................(11)

**MINOR IN HISTORY**

Required 20 hours, at least 6 must be in upper division courses, including:

- 9 hours from:
  - Hist 101 ............... Western Civilization to 1500. ..............(3)
  - Hist 102 ............... Western Civilization since 1500 .......(3)
  - Hist 103 ............... United States to 1877. .................(3)
  - Hist 104 ............... United States since 1877 ..........(3)

**RELATED FIELD CONCENTRATION IN INTELLECTUAL HISTORY, MINOR ONLY:**

Required: 20 hours Upper Level work approved by the chairs of the History or Philosophy Departments.

Such courses as follows may be used:

- Hist 330 ............... The United States: Social and Cultural 20th Century ..........(3)
- Hist 331 ............... The United States: Social and Cultural 19th Century ..........(3)
- Hist 341 ............... Ancient and Medieval Science, Technology and Magic ..........(3)
- Hist 342 ............... Modern Science and Technology ..........(3)
- Phil 300 ............... Classical Greek and Hellenistic Philosophy ..........(3)
- Phil 301 ............... Medieval Period ..........(3)
- Phil 302 ............... Renaissance to Enlightenment ..........(3)

**History (Hist)**

R. Beringer (Chair), Berger, Clingan, Ellis, Ettinger, Handy-Marchello, Howard, Iseminger, Mochoruk, Porter, Rowley, and Vivian

The History program at the University prepares one to understand oneself and one’s society, as well as other people in different cultures in the past and in the present. Beyond this the department trains students for the teaching of history at all levels, government service, and graduate studies in history. The study of history may serve as preprofessional training for other areas such as law or the ministry.
Courses

101. Western Civilization to 1500. 3 credits. An interpretive survey of cultural continuity from 3300 B.C. to the end of the European Middle Ages. F,S

102. Western Civilization since 1500. 3 credits. An interpretive survey with emphasis on movements common to Western Europe from the Reformation through World War II. F,S

103. United States to 1877. 3 credits. A survey of early American history, including the 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 last century of American history, including the transformation of an isolationist, agrarian nation into an urban, industrial, and world power, with emphasis upon the resulting domestic maladjustments. F,S

106. Middle Eastern Civilization From Islam to Present Time. 3 credits. A survey history of the civilizations of the Early Mediterranean since the rise of Islam to the time of the formation of the present nation states. S,2

200. History through Biography. 2 credits. (Repeatable, with different figures, to 6 credits.) The study of history through the lives and contributions of major leaders or figures. The nation, period, or development, and persons involved will change each semester. S,2,F,2

203. Economic Development of the United States Since 1865. 3 credits. A survey of major developments in American economic growth. The first four weeks are devoted to the period before 1865; the remainder of the semester involves a more detailed study of events and changes. S,2

204. Canada to 1867. 3 credits. A survey of pre-Confederation Canadian history from the pre-Columbian period to 1867. Particular attention will be paid to the social, economic, and political factors in Canada and America which shaped Canada's colonial history. F,S

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 twentieth century. S,2

208. U.S. Since 1960. 3 credits. A survey of the Depression and New Deal, the Cold War, the consumer society and the travail of liberalism in recent America. Primarily for history majors. F,2

210. United States Military History. 3 credits. A survey from colonial times to the present of the Army's role 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

214. Latin America to 1825. 3 credits. An examination of the historical evolution of the American hemisphere from pre-Columbian times to the collapse of the Spanish Empire, including the rise of indigenous cultures and civilizations. Spanish and Portuguese invasion and conquest, and the character of colonial rule. F,2

215. Latin America: The National Experience since 1825. 3 credits. A survey of the Spanish American republics and Brazil during the 19th and 20th centuries, with emphasis on the challenges of democratic leadership, economic dependency, social integration, and cultural pluralism. S,2

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 emphasis 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, and Sweden from the Lutheran Reformation to the present. Emphasis is on popular movements of the nineteenth and twentieth centuries. S,2

223. The City in History. 3 credits. A survey of the rise of the city and the development of urban life from ancient times to the present. F,2

239. 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,2

240. The Historian's Craft. 3 credits. An introduction to the nature of history—how it should be read, understood, researched, reported and written. F,S

300. Topics in History, 1-3 credits. Repeatable to 12. Selected 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; 12 credits to degree requirements. 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,2

325. The United States: Nineteenth Century American West. 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,2

326. The United States: The Twentieth Century American West, 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,2

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,2

331. The United States: Social and Cultural, 20th Century. 3 credits. A survey of the growth of government action in social welfare. Emphasis is given to the advent and growth of a mass, popular culture. S,2

332. 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. S,2

333. 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,2

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 U.S.S.R., popular disarmament movements, and diplomatic efforts to control nuclear weapons and their proliferation. A final section will deal with 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. S,2

337. 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 student, department, and employer. S/U grading only. F,S,SS

339. The United States and Vietnam, 1945-1975. 3 credits. An exploration of Southeast Asian as well as American history. This course will survey 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,2

341. Ancient and Medieval Science, Technology and Magic. 3 credits. A survey of the origins and development of scientific thought in Greek, Dacian, European Medieval, and Renaissance cultures. F,2

342. Modern Science and Technology. 3 credits. A survey of the revolution in scientific thought in the age of the Renaissance, the Copernican Revolution, and the development of physics, chemistry, geology, biology, etc. into modern times. S,2

343. 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,2

344. Ancient Rome. 3 credits. A survey of the prehistory, 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,2

345. The Scandinavian Year East. 3 credits. A course intended to acquaint the student with cultures of the ancient western Asian world. Egypt, Iran, Iraq, Turkey, and the Levant are the areas emphasized. S,2

350. Europe: The Reformers, 1500-1648. 3 credits. The flow of events and ideas in Europe from the beginning of the Reformation to the end of the religious wars. F,2

351. 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,2

352. Europe: French Revolution and Napoleon Era, 1789-1815. 3 credits. A course which serves as an admirable vehicle to observe human nature at its best and worst, as people responded to unprecedented and unexpected problems and opportunities. Study of this classic revolution compels a conclusion on how revolutions begin and, once begun whether they move under their own momentum to excess and then reaction. S,2

353. Europe: 1815-1918. 3 credits. A survey developing the theme that from 1815 to 1848 idealistic and utopian means were employed by those who sought to change frontiers, institutions, or governments. These methods were largely ineffective. With the 1848 revolutions, “a new toughness of mind” emerged, and those seeking to effect change became more pragmatic and realistic, as manifested, for example, in Marxism and Realpolitik. F,2

355. Europe Since 1918, 3 credits. A course divided into two equal parts—1919-1929 and 1929-1939. Until 1929 the postwar settlement—with its institutions, values, and hopes—appeared to be working. After 1929 it obviously was not. The conclusion of the course is that postwar problems were not resolved in their fundamentals and that World War II but a continuation of World War I, after a twenty-year amnesiosis. 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 attention will be paid to the problems of modernization in traditional societies and to the nature of fundamental social revolution. F/S

364. Modern Japan. 3 credits. A survey of the political, economic, social, and cultural transformation of Japan from the arrival of Commodore Perry in 1853 until recent times. Particular attention will be paid to modernization and its meaning for the Japanese people and to the international context of Japan’s military tragedy and economic success. S/S

403. The United States: The Colonial Period. 3 credits. A survey of the backdrop of British colonization, the development of diverse colonial cultures, and the transformation in maturing provincial societies of the European heritage. The seventeenth-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 underlying theme is long-range causes of American independence. F

404. The United States: Revolutionary Era, 1760-1799. 3 credits. A survey of the immediate causes of the American Revolution, with emphasis upon the incompatibility of American and British constitutional and ideological views. American techniques of propaganda and resistance to imperialism; 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 character, and the simultaneous growth of sectional forces which brought the nation to the brink of Civil War. S

406. The United States: Civil War and Reconstruction, 1850-1877. 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/S

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. Detailed attention is given to the Populist and Progressive movements. F/S

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 Republican ascendency and social changes during the 1920s, the causes of the Great Depression, the New Deal, the road to World War II, and the war, especially the home-front. F/S

409. History of Argentina. 3 credits. The course examines the development of Argentina from its colonial foundations to contemporary times. Emphasis is placed upon political consolidation, economic growth and expansion, social integration, and democratic leadership patterns. F/S

410. History of Mexico. 3 credits. The study of modern Mexico from Independence to contemporary times, with concentration on the Revolution of 1911 and after, national integration, industrialization, and political consolidation. S/S

411. U.S., Foreign Relations, 1776-1900. 3 credits. An advanced survey of the major foreign policies developed by the U.S. from the American Revolution through 19th century. F/S

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

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/S

414. France Since 1815. 3 credits. A survey of the Red versus Black tradition during the nineteenth century and its reproduction in the twentieth century. F

415. Germany Since 1815. 3 credits. An interpretation of the Second Reich, Weimar, and the Third Reich. S

416. Russia to 1855. 3 credits. A survey of Russia’s political, economic, and cultural development before the beginning of modern reforms and the growth of revolutionary ideas. F/S


418. Great Britain Since 1815. 3 credits. A survey developing the theme of the pragmatic response of the British people to the problems and opportunities provided by the Industrial Revolution. The conclusion presented is that the Welfare State established after World War II was the logical culmination of this pragmatic response. F/S

421. The British Empire, 1496-1884. 3 credits. A survey of British Imperial history from the time of the early Empire, this course will focus upon the cultural, economic, and political factors which shaped Britain’s Imperial history as well as the history of its colonies. F/S

422. The British Empire and Commonwealth, 1884-the present. 3 credits. A survey of British Imperial history from the “Scramble for Africa” to the present. Beginning 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 Empire/Commonwealth in the modern era. S/S

431. History of the Great Plains. 3 credits. A historiographic and thematic approach to the area west of the 99 meridian and east of the Rocky Mountains, including the Canadian prairie provinces, from the period of Plains Indians to the present. S/S

440. Research. 2 credits. A methodology course. Though designed primarily for history majors, History 440 may prove very useful for students in other social science fields. Through discussion and working in the library, the students develop skills both in the compiling of a bibliography and in the use of journals, newspapers, government documents, manuscript collections, pictorial materials, etc. Each student writes a paper that demonstrates the use and evaluation of these historical source materials. F/S

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 status of British North America and then Canada itself, this course examines the often complex, multi-party relationship between the U.S., Canada, and Great Britain F/S

481. Public History Practice. 3 credits. A practicum in which the student learns through experience the techniques of public history work. S/S

495. Readings in History, 1-3 credits. Repeatable to 6. F/S

499. Senior Honors Theses. 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

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**Honor's Program (Hon)**

**J. Anderegg, Program Coordinator**

For a full description of the Honors Program, see page 9.

Graduation as a scholar in the Honors Program Required 125 hours, including 24 credits from the following:

I. The Honors Program Requirements are in lieu of University General Education Requirements.

II. The Honors Program English Composition Requirement.

One of the following courses (Honors sections preferred):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Engl 102</td>
<td>Composition II</td>
<td>3</td>
</tr>
<tr>
<td>Engl 203</td>
<td>Composition III</td>
<td>3</td>
</tr>
<tr>
<td>Engl 209</td>
<td>Technical and Business Writing</td>
<td>3</td>
</tr>
<tr>
<td>Engl 308</td>
<td>Composition IV</td>
<td>3</td>
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</table>

III. Other Honors Program coursework:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hon 101</td>
<td>Inquiry in the Humanities</td>
<td>3</td>
</tr>
<tr>
<td>Hon 102</td>
<td>Inquiry in the Social Sciences</td>
<td>3</td>
</tr>
<tr>
<td>Hon 103</td>
<td>Inquiry in the Sciences</td>
<td>3</td>
</tr>
<tr>
<td>Hon 250</td>
<td>Sophomore Honors Essay</td>
<td>3</td>
</tr>
<tr>
<td>Hon 291</td>
<td>Colloquium in the Humanities</td>
<td>3</td>
</tr>
<tr>
<td>Hon 292</td>
<td>Colloquium in the Social Sciences</td>
<td>3</td>
</tr>
<tr>
<td>Hon 293</td>
<td>Colloquium in the Sciences</td>
<td>3</td>
</tr>
<tr>
<td>Hon 301</td>
<td>Honors Mode</td>
<td>3</td>
</tr>
<tr>
<td>Hon 391</td>
<td>Advanced Colloquium in the Humanities</td>
<td>3</td>
</tr>
<tr>
<td>Hon 392</td>
<td>Advanced Colloquium in the Social Sciences</td>
<td>3</td>
</tr>
<tr>
<td>Hon 393</td>
<td>Advanced Colloquium in the Sciences</td>
<td>3</td>
</tr>
<tr>
<td>Hon 399</td>
<td>Independent Study</td>
<td>3</td>
</tr>
<tr>
<td>Hon 499</td>
<td>Senior Honors Thesis</td>
<td>3</td>
</tr>
</tbody>
</table>

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.

101. Inquiry in the Humanities. 3 credits. Prerequisite: admittance to the Honors Program. Reading and discussion of selected works of humanistic value; orientation to methods of Honors work. Normally taken by first-year students in the Honors Program. F/S

102. Inquiry in the Social Sciences. 3 credits. Prerequisite: admittance to the Honors Program. Readings and discussion of selected works that reflect the methodology and concerns of the social sciences; orientation to methods of Honors work. Normally taken by first-year candidate-members of the Honors Program. F/S

103. Inquiry in the Sciences. 3 credits. Prerequisite: admittance to the Honors Program. Readings and discussion of selected works that reflect the methodology and concerns of the sciences; orientation to methods of Honors work. May include laboratory component. Normally taken by first-year candidate-members of the Honors Program. F/S

280. Sophomore Honors Essay. 1 credit. Prerequisite: admittance to the Honors Program. An in-depth essay used to evaluate writing and organizational skills at the sophomore level. F/S/SS

291. Colloquium in the Humanities. 2-4 credits, repeatable. Prerequisite: admittance to the Honors Program. Interdisciplinary courses on varying topics related to the humanities; student participation in the form of writing, research, and discussion is stressed. F/S

292. Colloquium in the Social Sciences. 2-4 credits, repeatable. Prerequisite: admittance to the Honors Program. Interdisciplinary courses on varying topics related to the social sciences; student participation in the form of writing, research, and discussion is stressed. F/S
293. Colloquium in the Sciences, 2-4 credits, repeatable. Prerequisite: admittance to the Honors Program. Interdisciplinary courses on varying topics related to the sciences; student participation in the form of writing, research, and discussion is stressed. F,S

301. Honors Mode, 1 credit. Corequisite: Standard course in which Honors Mode complements. A method of using a 1 credit study load to increase the level of any standard course to an Honors quality course. It provides an intellectual enhancement to a standard course. F,S,SS

391. Advanced Colloquium in the Humanities, 2-4 credits, repeatable. Prerequisite: admission to the Honors Program. Advanced interdisciplinary courses on varying topics in the humanities. F,S

392. Advanced Colloquium in the Social Sciences, 2-4 credits, repeatable. Prerequisite: admittance to the Honors Program. Advanced interdisciplinary courses on varying topics in the social sciences. F,S

393. Advanced Colloquium in the Sciences, 2-4 credits, repeatable. Prerequisite: admittance to the Honors Program. Advanced interdisciplinary courses on varying topics in the sciences. F,S

399. Independent Study, 1-4 credits (repeatable to 12 credits). Prerequisite: admittance to the Honors Program. Individual instruction on specified topics arranged by mutual agreement among teacher, student and the Program. F,S,SS

499. Senior Honors Thesis, 3-15 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,SS

Humanities
(Hum)
P. Sanborn (Coordinator), Barrentine, 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.

101. Introduction to Humanities I, 4 credits. This course is designed to introduce beginning university students to the major disciplines of the Humanities: literature, philosophy, history, religion, drama, music, and art. The literature chosen each semester will vary, often focusing on a central theme. Class time will be used to discuss the texts and students will be expected to attend events in the fine arts. F,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

The Humanities Program also administers the Integrated Studies Program, which is an interdisciplinary multi-course program for first year students.

Indian Studies
(IS)
B. Hans (Chair), Gagnon, and Schneider

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 nonreservation 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 hours, including:

I. General Education Requirements, see pages 27-30.

II. The Following Curriculum:

36 major hours, including:

IS 121 Introduction to Indian Studies (3)
IS 240 Research and Writing in Indian Studies (3)
IS 275 History of Federal Indian Law and Policy (3)
Anthropology 375 North American Indians (3)

6 hours from Arts, Language, and Literature:

Engl 361 American Indian Languages I (3)
Engl 362 American Indian Languages II (3)
Engl 367 American Indian Literature (3)
Engl 369 Literature and Culture (3)

IS 255 Survey of Native American Arts (3)
Anthropology 220 Native American Technology (3)

3 hours from History:

IS 201 History of the Sioux (3)
IS 203 Introdutionary Survey of Chippewa History (3)
IS 207 History of the Three Affiliated Tribes (3)
IS 331 Traditional Plains Indian Culture (3)
IS 352 American Indian Philosophical Thought (3)

6 hours from Contemporary Social Issues:

IS 330 Contemporary Plains Indian Culture (3)
IS 341 Urban Indians (3)
IS 345 Contemporary American Indian Issues (3)
IS 346 Contemporary Indian Women (3)
IS 363 Native American Child Development (3)
IS 371 Reservation Government and Politics (3)

Electives (9)

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, 491, and 497.

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 course work in areas which complement the major.

(4) Certification 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 hours including:

IS 121 Introduction to Indian Studies (3)
IS 240 Research and Writing in Indian Studies (3)
IS 375 History of Federal Indian Law and Policy (3)
Anth 375 North American Indians (3)

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,S

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, sociological, 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. Introductory Survey of Chippewa History, 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.

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

101
Industrial Technology

B. Nwoke (Chair), Diez, Holten, and Smart

The Department of Industrial Technology offers three four-year undergraduate degree programs (Bachelor of Sciences) and a graduate program leading to the Master of Science degree (thesis and non-thesis options). The baccalaureate degrees programs offered through the College of Business and Public Administration include Industrial Technology, Technology Teacher Education, and Occupational Safety and Environmental Health.

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 system areas: Graphic Communication, Energy & Electronics, and Manufacturing. The program is accredited by the National Association of Industrial Technology (NAIT). NAIT accreditation recognizes the attainment of professional standards for industrial technology.

The Technology Teacher Education program includes a major and minor designed for individuals interested in teaching technology education at secondary and post-secondary levels. Teacher certification is granted through the Center for Teaching and Learning.

The Occupational Safety & Environmental Health (OSEH) Program is designed for individuals interested in careers in safety and health. The OSEH degree is for preparation of managers in the safety, industrial hygiene, hazardous materials, and occupational safety and environmental health fields.

In addition, the Department of Industrial Technology offers interdisciplinary courses designed to enhance technological literacy to contribute toward the fulfillment of university general education requirements, to provide courses for a related fields concentration program in Graphic Communication through the College of Arts and Sciences, and to offer energy and electronics courses for the Airway Science Electronic Systems program through the Center for Aerospace Sciences.

College of Business and Public Administration

B.S. INDUSTRIAL TECHNOLOGY DEGREE PROGRAM

I. General Education Requirements, see pages 27-30.
   Requirement: 2.20 overall GPA

II. Industrial Technology Major Requirements:

   Technology Technical Base (18 Semester Hours Required)
   IT 101 ......................................................... Introduction to Energy and Power Systems .... (1)
   IT 103 ......................................................... Introduction to Manufacturing .... (1)
   IT 201 ......................................................... Electromechanical Fundamentals .... (3)
   IT 202 ......................................................... Technical Drawing .... (3)
   IT 303 ......................................................... Production Processes: Manufacturing .... (3)
   IT 312 ......................................................... Principles of Graphic Design and Layout .... (3)
   IT 312 ......................................................... Computer-Aided Design/Drafting .... (3)

   Technology Management Base (14 Semester Hours Required)
   IT 260 ......................................................... Computer Applications in Industrial Technology .... (3)
   IT 300 ......................................................... Technology, Society and the Individual .... (2)
   IT 310 ......................................................... Industrial Planning and Control .... (2)
   IT 330 ......................................................... Quality Assurance .... (3)
   IT 420 ......................................................... Industrial Facility Design .... (2)
   IT 440 ......................................................... Industrial Safety .... (2)

   Technology Selected Electives (22 Semester Hours Required):
   A technological emphasis may be chosen from the following systems areas. However a minimum of one course having each of the third-digit number (1), (2), (3), and (4) must be included.

   Energy and Electronic Technology Systems (16 Semester Hours Available):
   IT 211 ......................................................... Electric Circuits and Devices .... (3)
   IT 211 ......................................................... Computer-Aided Circuit Analysis and Design .... (3)
   IT 301 ......................................................... Microelectronic Circuits .... (3)
   IT 314 ......................................................... Digital Integrated Circuits .... (3)
   IT 411 ......................................................... Industrial Communication Systems .... (2)
   IT 416 ......................................................... Transportation Technology .... (2)
   IT 441 ......................................................... Computer-Aided Circuit Analysis and Design .... (3)

   Manufacturing Technology Systems (26 Semester Hours Available):
   IT 104 ......................................................... Industrial Materials .... (3)
   IT 213 ......................................................... Production Processes: Construction .... (3)
   IT 223 ......................................................... Advanced Synthesis .... (3)
   IT 340 ......................................................... Manufacturing Cost Estimating .... (2)
   IT 343 ......................................................... Motion and Time Study .... (2)
   IT 335 ......................................................... Computer Numerical Control .... (2)
   IT 383 ......................................................... Robotics and Automation .... (2)
   IT 403 ......................................................... Product Research and Development .... (3)
   IT 404 ......................................................... Materials Testing .... (3)
   IT 423 ......................................................... Computer-Integrated Manufacturing .... (3)

   Graphic Communication Technology Systems (18 Semester Hours Available):
   IT 302 ......................................................... Applied Graphic Design and Layout .... (3)
   IT 322 ......................................................... Fundamentals of Photography .... (3)
   IT 432 ......................................................... Fundamentals of Color Photography .... (3)
   IT 442 ......................................................... Desktop Publishing .... (3)

   Technological Systems Support Courses (These may be used to support each of the above three Technology Systems Areas):
   IT 314 ......................................................... Construction Materials and Processes .... (3)
   IT 337 ......................................................... Cooperative Education in Industrial Technology .... (1.8)
   IT 485 ......................................................... Field Experiences in Industrial Technology .... (1.6)
   IT 493 ......................................................... Workshop .... (1.6)
   IT 497 ......................................................... Directed Studies in Industrial Technology .... (1.6)

   Required Support Courses Selected From the Following or Higher Level (15 Semester Hours Minimum):
   Math 103 ......................................................... College Algebra .... (3)
   Math 105 ......................................................... Trigonometry .... (2)
   Math 204 or 211 ............................................. Survey of Calculus or Calculus I .... (3-4)
   Chem 105 ......................................................... General Chemistry I .... (4)
   Phys 101 & 102 ............................................. Introduction to College Physics .... (8)
B.S. INDUSTRIAL TECHNOLOGY
(The Teacher Education Program Option)

The teacher education program option offers a major and minor in technology education with teacher certification preparation through the Center for Teaching and Learning. The program is designed to prepare individuals for teaching technology education at the secondary and post-secondary levels.

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. Teacher Certification Requirements, see page 148.

III. The Following Curriculum:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 101</td>
<td>Introduction to Energy and Power Systems</td>
<td>(1)</td>
</tr>
<tr>
<td>IT 102</td>
<td>Introduction to Graphic Communication</td>
<td>(1)</td>
</tr>
<tr>
<td>IT 103</td>
<td>Introduction to Manufacturing</td>
<td>(1)</td>
</tr>
<tr>
<td>IT 104</td>
<td>Industrial Materials</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 201</td>
<td>Electromechanical Fundamentals</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 202</td>
<td>Technical Drawing</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 203</td>
<td>Production Processes: Manufacturing</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 211</td>
<td>Electric Circuits and Devices</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 212</td>
<td>Principles of Graphic Design and Layout</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 213</td>
<td>Production Processes: Construction</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 300</td>
<td>Technology, Society and the Individual</td>
<td>(2)</td>
</tr>
<tr>
<td>It 497</td>
<td>Directed Studies in Industrial Technology</td>
<td>(1-8)</td>
</tr>
<tr>
<td>Chem 105</td>
<td>General Chemistry I</td>
<td>(4)</td>
</tr>
<tr>
<td>CSci 110</td>
<td>Computer Programming I</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci 111</td>
<td>Computer Programming II</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 210</td>
<td>Intro. to Business &amp; Economic Statistics</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>Production Management</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Required Support Courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 223</td>
<td>Applied Synthetics</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 301</td>
<td>Microelectronic Circuits</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 302</td>
<td>Applied Graphic Design and Layout</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 312</td>
<td>Computer Aided Design/Drafting</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 314</td>
<td>Construction Materials, Processes</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 316</td>
<td>Technology Education for Teaching &amp; Learning</td>
<td>(2)</td>
</tr>
<tr>
<td>IT 322</td>
<td>Fundamentals of Photography</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 337</td>
<td>Cooperative Education in Industrial Technology</td>
<td>(1-8)</td>
</tr>
<tr>
<td>IT 341</td>
<td>Digital Integrated Circuits</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 383</td>
<td>Robotics and Automation</td>
<td>(2)</td>
</tr>
<tr>
<td>IT 401</td>
<td>Electronic Communications Systems</td>
<td>(2)</td>
</tr>
<tr>
<td>IT 403</td>
<td>Product Research &amp; Development</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 404</td>
<td>Materials Testing</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 412</td>
<td>Design/Drafting</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 416</td>
<td>Transportation Technology</td>
<td>(2)</td>
</tr>
<tr>
<td>IT 422</td>
<td>Systems Design</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 423</td>
<td>Computer Integrated Manufacturing</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 432</td>
<td>Fundamentals of Color Photography</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 442</td>
<td>Desktop Publishing</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 497</td>
<td>Directed Studies in Industrial Technology</td>
<td>(1-8)</td>
</tr>
</tbody>
</table>

Required Support Courses (Math and Science):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 101</td>
<td>College Algebra</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci 101</td>
<td>Introduction to Computers</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 260</td>
<td>Computer Applications in Industrial Technology</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 105</td>
<td>Trigonometry</td>
<td>(2)</td>
</tr>
<tr>
<td>Phys 101</td>
<td>Introductory College Physics</td>
<td>(4)</td>
</tr>
<tr>
<td>Chem 104</td>
<td>Introductory Chemistry</td>
<td>(4)</td>
</tr>
<tr>
<td>Chem 105</td>
<td>General Chemistry I</td>
<td>(4)</td>
</tr>
</tbody>
</table>

TECHNOLOGY EDUCATION MINOR (Teaching Option)

Required 24 hours:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 201</td>
<td>Electromechanical Fundamentals</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 202</td>
<td>Technical Drawing</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 203</td>
<td>Production Processes: Manufacturing</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 211</td>
<td>Electric Circuits and Devices</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 212</td>
<td>Principles of Graphic Design and Layout</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 213</td>
<td>Production Processes: Construction</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 312</td>
<td>Computer Aided Design/Drafting</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 400</td>
<td>Teaching Technology Education</td>
<td>(3)</td>
</tr>
</tbody>
</table>

B.S. OCCUPATIONAL SAFETY & ENVIRONMENTAL HEALTH (OSEH)

I. University General Education Requirements:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 212</td>
<td>Organic Chemistry</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 315</td>
<td>Topics in Occupational Safety and Environment</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 103</td>
<td>Introduction to Energy and Power Systems</td>
<td>(1)</td>
</tr>
<tr>
<td>Mgmt 300</td>
<td>Principles of Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 305</td>
<td>Production Management</td>
<td>(3)</td>
</tr>
</tbody>
</table>

II. OSEH Major Admission Requirements

A. Completion of 45 semester hours of course work.
B. Completion of the following courses with a minimum grade of C:

- Chemistry 105 & 106               (8)
- Math 103                        (3)
- CSci 110                       (3)
- CSci 111                       (3)

C. Completion of at least 15 hours in residence at the University of North Dakota with a minimum of 2.2 GPA.

NOTE: After the above admission requirements are met, students must apply for admission to the OSEH major program.

III. OSEH Major

General Core (27 semester hours required)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSci 110</td>
<td>Computer Programming I</td>
<td>(3)</td>
</tr>
<tr>
<td>CSci 111</td>
<td>Computer Programming II</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 210</td>
<td>Intro. to Business &amp; Economic Statistics</td>
<td>(3)</td>
</tr>
<tr>
<td>Psy 301</td>
<td>Industrial &amp; Organizational Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 312</td>
<td>Computer Aided Design/Drafting</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 315</td>
<td>Topics in Occupational Safety and Environment</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 300</td>
<td>Management Principles</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 305</td>
<td>Managerial Concepts</td>
<td>(3)</td>
</tr>
<tr>
<td>ENGL 209</td>
<td>Technical &amp; Business Writing</td>
<td>(3)</td>
</tr>
<tr>
<td>ACCT 315</td>
<td>Business in the Legal Environment</td>
<td>(3)</td>
</tr>
<tr>
<td>IT 203</td>
<td>Fundamentals of Photography</td>
<td>(3)</td>
</tr>
</tbody>
</table>

Plus One of the Following Three Options:

Industrial Safety Concentration (Option I)

Required: 21 hours including:

- Eight (8) hours from:
  - IT 305: Fire Safety
  - IT 405: Industrial Hygiene
  - IT 440: Industrial Safety
  - PHE 402: Principles of Pharmacology and Toxicology

Thirteen (13) hours selected from the following:

- IT 315: Topics in Occupational Safety and Environmental Health
- IT 316: Occupational Safety and Environmental Health
- IT 317: Hazardous Materials
- IT 318: Cooperative Education
- IT 400: Teaching Technology Education
- IT 412: Principles of Graphic Design and Layout

Industrial Hygiene Concentration (Option II)

Required: 21 hours including:

- The following thirteen (13) hours:
  - Chem 209: Quantitative Analysis
  - Chem 212: Organic Chemistry
  - IT 315: Topics in Occupational Safety and Environmental Health
  - IT 405: Industrial Hygiene
  - IT 415: Waste Handling/Disposal
  - IT 422: Systems Design
  - IT 423: Computer Integrated Manufacturing
  - IT 432: Fundamentals of Color Photography
  - IT 442: Desktop Publishing
  - IT 497: Directed Studies in Industrial Technology

Eight (8) hours selected from:

- IT 314: Hazardous Materials
- IT 315: Topics in Occupational Safety and Environmental Health
- IT 316: Occupational Safety and Environmental Health
- IT 317: Hazardous Materials
- IT 318: Cooperative Education
- IT 400: Teaching Technology Education
- IT 412: Principles of Graphic Design and Layout

Hazardous Materials Concentration (Option III)

Required: 21 hours including:

- The following thirteen (13) hours:
  - Chem 209: Quantitative Analysis
  - Chem 212: Organic Chemistry
  - IT 335: Hazardous Materials
  - IT 415: Waste Handling/Disposal
  - IT 422: Systems Design
  - IT 423: Computer Integrated Manufacturing
  - IT 432: Fundamentals of Color Photography
  - IT 442: Desktop Publishing
  - IT 497: Directed Studies in Industrial Technology
  - IT 337: Cooperative Education

 Eight (8) hours selected from:

- IT 314: Hazardous Materials
- IT 315: Topics in Occupational Safety and Environmental Health
- IT 316: Occupational Safety and Environmental Health
MINOR IN MANUFACTURING TECHNOLOGY SYSTEMS (20 credits)

1. The following 9 credits:
   IT 103 Introduction to Manufacturing (3)
   IT 202 Technical Drawing (3)
   IT 302 Production Processes: Manufacturing (3)
   IT 300 Technology, Society, and the Individual (2)

2. 11 credits selected from the following:
   IT 104 Industrial Materials (3)
   IT 213 Production Processes: Construction (3)
   IT 330 Quality Assurance (3)
   IT 383 Robotics and Automation (2)
   IT 403 Product Research and Development (3)
   IT 405 Material Testing (3)
   IT 420 Industrial Facility Design (2)
   IT 423 Computer Integrated Manufacturing (3)
   IT 497 Directed Studies in Industrial Technology (1-3)

MINOR IN ENERGY/ELECTRONICS TECHNOLOGY SYSTEMS (20 credits)

1. The following 9 credits:
   IT 101 Introduction to Energy and Power (1)
   IT 201 Electromechanical Fundamentals (3)
   IT 211 Electric Circuits and Devices (3)
   IT 300 Technology, Society, and the Individual (2)

2. 11 credits selected from the following:
   IT 301 Microelectronic Circuits (3)
   IT 341 Digital Integrated Circuits (2)
   IT 304 Electronic Communication Systems (2)
   IT 413 Transportation Technology (2)
   IT 441 Computer Aided Circuit Analysis & Design (3)
   IT 497 Directed Studies in Industrial Technology (1-3)

Courses

101. Introduction to Energy & Power Systems 1 credit. Energy resources and forms: emphasis on technological aspects of conversion, transmission, and utilization with ramifications of ecological, economic, and social concerns for conservation. F

102. Introduction to Graphic Communication 1 credit. Introduction to systems used in graphic communication; includes man to man, machine to man, and machine to machine. F

103. Introduction to Manufacturing 1 credit. The study of input, processes, and output fundamental to manufacturing and construction, emphasizing the economical and orderly methods of fabrication within a system. F

201. Electromechanical Fundamentals 3 credits. Prerequisites: Math 103, Phys 101 & 102. The study of fundamental, mechanical, hydraulic, and pneumatic, and electrical apparatus used in power systems. F

202. Technical Drawing 3 credits. Prerequisite: Math 103. The study of technical drawing techniques to include various projections, pictorials, dimensioning, development and tolerancing used in business and industry. S

203. Production Processes: Manufacturing 3 credits. Prerequisite: IT 103. Fundamental concepts of processes and operations, especially those utilized in manufacturing products, with emphasis on tools and techniques. S

206. Recreational Crafts 3 credits. Basic techniques in a variety of crafts processes with emphasis on recreationally-oriented projects. F/S

211. Principles of Graphic Design and Layout 3 credits. Basic concepts, processes, and techniques involved in image generation, image reproduction, bindery, and estimating. F/S

212. Principles of Graphic Design and Layout 3 credits. Basic concepts, processes, and techniques involved in image generation, image reproduction, bindery, and estimating. F/S

213. Production Processes: Construction 3 credits. Prerequisites: IT 103 or 104 or consent of instructor. A study of the production processes and techniques utilizing tools and machines leading to the production of constructed assemblies. F/S

221. Applied Synthetics 3 credits. Prerequisite: Chem 104 or 105. A study of synthetic polymer materials emphasizing identification of characteristics and properties, and their application as related to industrial products. S

231. Computer Applications in Industrial Technology 3 credits. Overview of software and computer hardware applications used in industrial technology to include PC computers, peripheral devices, and network systems. Also covered are main-frame and mini computer applications. S

232. Microelectronic Circuits 3 credits. Prerequisite: IT 211. Study of electronic components and circuits (discrete and integrated) and their functional and operational characteristics. F

233. Applied Graphic Design and Layout 3 credits. Prerequisite: IT 212 or consent of instructor. Photo reprographics concepts and techniques; emphasis on message preparation, photo conversion and image transfer through offset and screen processes. S

235. Fire Safety 2 credits. Prerequisites: Chem 106. Studies of fire and familiarization 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 structures, occupancies, and situations. F/S

236. Industrial Organization Planning and Control 2 credits. An analysis of the systematic direction and control of the processes that transform inputs into finished goods and services. Emphasis is on the flow and application activities, forecasting, allocating resources, designing products and services, and assuring quality. F/S

237. Computer Aided Design/Drafting 3 credits. Prerequisite: IT 202 or consent of instructor. The study of the application of computer graphics to computer aided design and drafting activities in industry. F/S

238. Construction Materials and Processes 3 credits. Prerequisite: Upper division majors or consent of instructor. The study of construction materials and processes, assemblies, and sub-assemblies of modular components with emphasis on the environmental impact of construction. Introduction to structural analysis. S/S

315. Topics in Occupational Safety and Environmental Health 1-6 credits. Prerequisites: Math 204 and Chem 212, Anat 204, HPER 310, IT 440, and Chem 104 (depending on the topic). Studies of selected topics in Occupational Safety and Environmental Health. Topics include: Toxic Substances, Emergency Response, Inspections, Radiation Safety, and Asbestos. Credit will apply to the three concentrations within the Occupational Safety and Environmental Health major. S/S

315.01. Topics in Occupational Safety and Environmental Health: Toxic Substances 1 credit. Prerequisite: Chem 212. Students will gain information in environmental health and occupational safety in the use of toxic substances. This topic will be approached by looking at classes of elements as found in the periodic chart. S/S

315.02. Topics in Occupational Safety and Environmental Health: Emergency Response 1 credit. Prerequisites: Anat 204, HPER 310. Emphasis is given to addressing problems associated with the proper and safe response to various types of emergencies including medical emergencies in the workplace. Additional attention will be directed toward accidents or incidents involving fires and hazardous substances. Consideration is
given to the regulatory requirements that might be faced by those responding to these types of emergencies.

315.03, Topics in Occupational Safety and Environmental Health: Inspections, 1 credit. Prerequisite: IT 440. Special consideration is given to the problems associated with interactions of management as related to regulatory matters. An awareness of the various rules and regulations that affect the workplace are part of the overview presented by the instructor. SS

315.04, Topics in Occupational Safety and Environmental Health: Radiation Safety, 1 credit. Prerequisite: Chem 106. Special emphasis is given to the problems associated with the proper and safe handling of Radioactive Materials in both sealed and unsealed forms. Consideration is given to the regulatory requirements that might face a licensee. SS

315.05, Topics in Occupational Safety and Environmental Health: 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

322, Fundamentals of Photography, 3 credits. Fundamentals of Photography is a lecture/laboratory course designed to introduce students to the art and science of black and white photography. 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,S

335, Hazardous Materials, 2 credits. Attention will be given to the problems associated with the proper and safe handling of hazardous materials, understanding regulatory requirements, personal hazards faced by employees, personnel exposure limits, and protective measures to be employed. Laboratory demonstrations for protective measures of hazardous materials will show how these measures are implemented. S/S

337, Cooperative Education, 1-8 credits repeatable to 24. Prerequisite: Junior standing; a 2.5 overall GPA, and departmental approval. A practical work experience with an approved industrial enterprise. Arranged by the student, department and employer. S/U grading only. F,S,S

340, Manufacturing Cost Estimating, 2 credits. Prerequisite: Econ 210, Math 204, or equivalent. The principles and techniques necessary for the economic analysis and evaluation of industrial design and projects. F,S

341, Digital Integrated Circuits, 3 credits. Prerequisite: IT 211 or consent of instructor. The study of basic concepts of digital circuits and devices; operational characteristics of digital integrated circuits. S/S

342, Motion and Time Study, 2 credits. Prerequisites: IT 203 and Econ 210. The systematic determination of preferable work methods, with the appraisal, in terms of time, of the value of work involving human activity. Emphasis on the development of materials required to make practical use of these data. F/S

353, Computer Numerical Control, 2 credits. Prerequisites: IT 203, 312. Fundamentals of computer-aided manufacturing to include programming languages, process interface, hardware, numerical control systems, canned cycles, interpolation, variable and computer assisted parts programming, using numerical controlled lathe and mill. F,S

383, Robotics and Automation, 2 credits. Prerequisites: IT 201 and 203. The study of mechanical and electrical configurations of industrial robots, their applications in industrial automation, including associated control systems and manufacturing technology. S

400, Teaching Technology Education, 3 credits. An analysis of various methods employed in teaching technology education. Emphasis placed on development of critical attitudes toward precision-teaching through ordering knowledge based upon behavioral objectives. S

401, Electronic Communication Systems, 2 credits. Prerequisite: IT 301 or consent of instructor. Study and use of electronic methods of audio, visual, and data communication including modulation, transmission, reception, and reconstitution of information. S

403, Product Research and Development, 3 credits. Prerequisite: IT 203 or consent of instructor. The study of product development and production planning for manufacturing through the application of research methodologies, design processes, and prototype development. F

404, Materials Testing, 3 credits. Prerequisites: IT 201, 202, 203, 212, Chem 106 or equivalent. Methods by which properties (i.e., physical, mechanical, thermal, electrical, optical, acoustical, and chemical) of industrial materials are tested for determination of applications. F/S

415, Industrial Hygiene, 3 credits. Prerequisites: Anit 204, Chem 106. Hazards as they relate to human health will be addressed. The course will include the recognition, evaluation, and control of hazards in the industrial setting. F

412, Design/Drilling, 3 credits. Prerequisite: IT 312 or consent of the instructor. The application of design and drafting techniques for the design of tools, machines and products. Selected topics included are the design process, material selection, fabrication process and ergonomics. F

415, Waste Handling/Disposal, 2 credits. Prerequisites: IT 335, Chem 209. Regulatory and environmental protection issues will be addressed as they relate to current industrial operations. Emphasis will be placed on priority problems being properly identified and environmentally sound and cost-effective solutions planned. S/S

416, Transportation Technology, 2 credits. Prerequisite: IT 201 or consent of the instructor. Basic principles and techniques used in planning, designing, and operating transportation systems in transporting people, raw materials, and products as an economic activity. Emphasis is on the terrestrial, marine, atmospheric, and space environmental modes and the technical sub-systems of each. S/S

420, Industrial Facility Design, 2 credits. Prerequisites: Math 204 or 211, IT 312. Principles and applications of designing industrial facilities with emphasis on site location, environmental consideration, qualitative and quantitative modeling. The course utilizes computers in facility planning and quantitative analysis. S

422, Systems Design, 3 credits. Prerequisite: IT 312 or instructor consent. The study of technological systems design, from problem conception through preproduction planning, including graphic specifications and demonstrations. S/S

423, Computer-Integrated Manufacturing, 3 credits. Prerequisites: IT 203 and IT 312 or consent of instructor. The study of the techniques utilized to integrate the process of automated production environments. Students will examine the forms of computer-based automated systems used in the various areas of a manufacturing system and how systems can be integrated through data communications networks. F/S

432, Fundamentals of Color Photography, 3 credits. Prerequisites: LSAV 470 or IT 322 or consent of the instructor. Fundamentals of Color Photography is an introductory course to the techniques, images, and history of color photography. The course is designed to provide the student with a strong conceptual base from the aesthetic and technical explorations conducted through lecture and laboratory activities. S/S

440, Industrial Safety, 2 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 management of technology and people for optimum safety conditions and productivity. S

441, Computer-Aided Circuit Analysis and Design, 3 credits. Prerequisites: IT 301. An in-depth study of the concepts and techniques of computer-aided circuit analysis and design. Emphasis is placed on the use of commercial computer-aided design tools used in industry for analysis and design of analog and digital circuits. S/S

442, Desktop Publishing, 3 credits. Prerequisites: IT 212, 302 or consent of instructor. The course is designed to provide a broad understanding of computer-assisted publishing. It consists of lecture, discussion, and practical laboratory activities in the areas of current developments in hardware and software, input/output equipment materials, and processes of electronic publishing. S

485, Field Experiences in Industrial Technology, 1-6 credits. Prerequisite: Junior standing or instructor consent. Provides students with the opportunity to work in an industrial or business enterprise to acquire employment competencies in an industrial/business setting. The nature of the field experience will be determined by advisement. S/F/S

493, Workshop, 1-6 credits. A workshop course on a specific topic, primarily for but not confined to Continuing Education. F,S,S

497, Directed Studies in Industrial Technology, 1-8 credits. Prerequisite: Junior standing and instructor consent. Studies in topics pertinent to the students’ needs in selected topics including (a) Curriculum Innovation, (b) Energy/Power, (c) Graphic Communication, (d) Production, and (e) Materials Science. F,S

Integrated Studies

P. Sanborn (Coordinator), Barrentine

(The permanent faculty is supplemented by faculty from other University departments.)

An extraordinary option for students, the Integrated Studies Program offers a cluster of 3-5 courses each semester which help students fulfill general education requirements necessary for all University undergraduate degree programs. Each semester includes credits from at least the following general education categories: English Composition, Arts and Humanities, and Math, Science, and Technology. Additional credits each term may come from either of the last two categories listed above, or from Social Science.

Work and study in the Program are organized around a central theme, and carried out in a variety of small group settings in which discussion among students is emphasized. Close contact between students and faculty members is a strong feature of this learning community; students spend the entire semester together studying the same materials and form close relationships. The program is designed to help develop skills such as critical thinking, writing, close reading of texts, cooperative work, and oral communication and works well with most majors at UND. It is particularly good for deciding students and for anyone interested in an educational major.

Students interested in the Integrated Studies Program can call (701) 777-3222, or write to PO Box 7117, Grand Forks, ND 58202-7117. The Program’s office is located in 301 Babcock Hall on the University campus.
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. They may also visit the College of Arts and Sciences Office where information on degree programs in interdisciplinary fields would be available. Students in general may plan such programs with the approval of the Dean and the departments involved.

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

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 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 hours including:

1. General Education Requirements, see pages 27-30.
2. The Following Curriculum:
   - Total of 30 Hours Plus Language Requirement:
     - Hist 102 ..........................Western Civilization since 1500............................(3)
     - Hist 215 ..........................Latin America since 1825.................................(3)
     - Hist 362 ..........................Modern Chinese Civilization..............................(3)
     - Hist 364 ..........................Modern Japanese Civilization.............................(3)
     - Anth 171 ..........................Cultural Anthropology......................................(3)
     - Anth 177 ..........................Comparative Politics........................................(3)
     - Religious Studies 203 .............World Religions............................................(3)
   - Three (3) Hours From the Following:
     - Hist 106 ..........................Middle Eastern Civilization.................................(3)
     - Hist 107 ..........................Modern Middle East...........................................(3)
     - Hist 215 ..........................Latin America since 1825.................................(3)
     - Hist 216 ..........................Modern Latin America.........................................(3)
     - Hist 362 ..........................Modern Chinese Civilization..............................(3)
     - Hist 364 ..........................Modern Japanese Civilization.............................(3)
   - Nine hours of upper division courses in an international concentration or a modern language.

   These nine hours should be chosen in consultation with the Director of International Programs 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 hour requirement may be fulfilled.

Language
- Level Four Proficiency and additional three hours

International Studies Minor Requirements

1. Required Courses
   - Hist 101 ..........................World Regional Geography.................................(3)
   - Hist 102 ..........................World Regional Geography.................................(3)
   - Hist 215 ..........................Latin America since 1825.................................(3)
   - Hist 362 ..........................Modern Chinese Civilization..............................(3)
   - Hist 364 ..........................Modern Japanese Civilization.............................(3)
   - Anth 171 ..........................Cultural Anthropology......................................(3)
   - Anth 177 ..........................Comparative Politics........................................(3)
   - Religious Studies 203 .............World Religions............................................(3)

2. One Additional Course selected from the following:
   - Hist 106 ..........................Middle Eastern Civilization.................................(3)
   - Hist 215 ..........................Latin America since 1825.................................(3)
   - Hist 362 ..........................Modern Chinese Civilization..............................(3)
   - Hist 364 ..........................Modern Japanese Civilization.............................(3)

Languages: Department of Modern and Classical Languages & Literatures (Lang)

R. Koprince (Chair), Bakken, Benoit, Berne, Dale, DeFilippo, DuBois, DuFner, Fleshman, Hall, Lebugle, Maury, Nelson, Thureen, and Tschacher

The Department of Modern and Classical Languages and Literatures offers study in French, German, Greek, Italian, Latin, Norwegian, Russian, and Spanish. See English 161 and 162 for study of North Dakota Native American languages. Students may elect French, German, Latin, Norwegian, or Spanish as their major field of study. Minors are offered in French, German, Latin, Norwegian, Russian, and Spanish.

Course work is divided into Lower and Upper Divisions. The courses 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 major normally includes a minimum of twenty-two to twenty Upper Division credit hours in a single language, plus in some cases approved course work in related fields. A minor consists of a minimum of ten or twelve Upper Division credit hours in a single language. Since the schedule for courses in related fields can vary from semester to semester, students must consult their faculty advisor 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 advisor each semester and for obtaining the advisor’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.

Language Placement

All students with a background in a second language for which they wish to receive credit or in which they wish to continue or establish proficiency must take a Language Placement Test. It is recommended that this be done during pre-registration or registration, and in no case later than the end of their first semester in residence. First semester students enrolled in a language who wish to take a Placement Test in the same language must take the Placement Test during the first two weeks of the semester. Students may receive advanced standing and from 4 to 16 hours credit toward graduation in each language.
Credit which a student has earned through College Level Examination Program (CLEP) tests may, in certain circumstances, be recognized by UND. See Admissions Office for requirements.

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 page 23.

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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Level</th>
<th>Equivalent</th>
<th>Credit</th>
<th>May enroll in</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>101</td>
<td>4 hours</td>
<td>102 courses</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>102</td>
<td>8 hours</td>
<td>201 courses</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>121</td>
<td>12 hours</td>
<td>202 courses</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>202</td>
<td>16 hours</td>
<td>Upper Division courses</td>
<td></td>
</tr>
</tbody>
</table>

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 language placement examination.

College of Arts and Sciences

B.A. WITH A MAJOR IN A LANGUAGE

Required 125 hours, including
I. General Education Requirements, see pages 27-30.
II. Major Curriculum Listed Under Specific Language.

MINOR IN A LANGUAGE

Required: A minimum of 10 or 12 Upper Division credit hours in a single foreign language. See the section for each language for specific required courses.

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:

General Education Requirements (see pages 27-30).
Courses and credit hours required for B.A. major in a language.

Students seeking teacher certification in French, German or Spanish must include among their electives at least two credits of phonetics and two credits of advanced grammar, with grades no lower than B in each of these courses; a course in civilization of the country or countries in which the language is spoken is also strongly recommended. Eight hours of approved course work in related fields is required in German. Western Civilization 101, 102 and four hours in English beyond Composition II must be included under either the requirements in General Education or course work in related fields. See the section in each language for specific course requirements.

Language majors should have advisors in both the Languages Department and the Department of Teaching and Learning.

Admission to the Secondary Education Program is normally done while taking T&L 200 (see pg. 148).

The Program in Secondary Education (see pg. 148) is to include:
  • T&L 200 Methods and Materials of Teaching a Foreign Language
  • 2 credits of T&L 390, supervised by Languages Department faculty (see pg. 148).

CLASSICAL LANGUAGES

Greek

251. Introduction to Greek. 4 credits. Reading of selections based on Attic Greek authors and introduction to grammar and syntax. F
252. Introduction to Greek. 4 credits. Prerequisite: Greek 251. Continues study of Attic Greek grammar and syntax, with selected readings from ancient authors. Grade of "C" or better in Greek 251 recommended. S

351. Greek Prose and Poetry. 4 credits. Prerequisite: Greek 252 or equivalent. Selected readings from Greek prose authors and poets, such as Plato, Lysias, or Euripides. May be repeated, with permission of instructor, up to 8 credit hours. F
352. Greek Poetry: Homer. 4 credits. Prerequisite: Greek 252 or equivalent. Selected readings from the Iliad or the Odyssey. May be repeated, with permission of the instructor, up to 8 credit hours. S
355. The Greek New Testament. 4 credits. Prerequisite: Greek 252 or equivalent. Introduction to the New Testament via selected readings in Greek from the Gospels. Additional topics for study will include the composition of the New Testament and its historical and philosophical background. On demand.
491. Individual Greek Readings. 1-3 credits. Prerequisite: Greek 252 or equivalent. Topic to be determined by the interest of the student and instructor. May be taken only with the consent of the department. May be repeated up to a total of 6 credit hours. On demand.

Latin

A major in Latin shall consist of 17 credit hours selected from Latin courses numbered 200 or above and 12 additional credit hours selected from among the following courses:

Latin courses numbered 300 or above, beyond the 17 credit hours already taken:
Greek C251, C252, C351, C352, C355, C491
Classical Literature C161, C362, C363, C364
History 101, 301, 343, 344, 345
Humanities 102
Philosophy 300, 301
Political Science 311
Other courses in related areas with permission of the department.

A minor in Latin shall consist of a minimum of 6 credit hours at the 300 level or above, plus at least 4 additional hours selected from the following:
Latin courses numbered 300 or above
Classical Literature C161, C362
History 344
Other courses in related areas with permission of the department.

Courses

C101. First-Year College Latin. 4 credits. Introduction to Latin grammar and syntax, with selected readings from ancient authors. F
C102. First-Year College Latin. 4 credits. Prerequisite: Latin 101 with a grade of C or better. Continued study of Latin grammar and syntax, with selected readings from ancient authors. S
C201. Second-Year College Latin. 4 credits. Prerequisite: Latin 102 or equivalent. Selections from the prose writers including Pliny the Younger, Gellius, Cicero, Sallust and from the poets Catullus, Martial, Phaedrus and Ovid. F
C202. Second-Year College Latin. 4 credits. Prerequisite: Latin 201 or equivalent. Selections from the prose writers including Pliny the Younger, Gellius, Cicero, Sallust and from the poets Catullus, Martial, Phaedrus and Ovid. S
C301. Latin Prose, 3 credits; repeatable to 9. Prerequisite: Latin 202 or equivalent. Readings from Apuleius, Cicero, Sallust, Seneca, Livy, Petronius or Tacitus. F
C404. Latin Poetry, 3 credits; repeatable to 9. Prerequisite: Latin 202 or equivalent. Readings from Vergil, Horace, Catullus, Ovid, Juvenal, Martial, Pausias or Terence. S
C471. Seminar in Latin Literature, 2 credits; repeatable to 6. Prerequisite: Latin 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.
C492. Individual Latin Readings. 1-3 credits. Prerequisite: Latin 202 or equivalent. Topic to be determined by the interests of the student and instructor. May be taken only with the consent of the department. May be repeated up to a total of 6 credit hours. On demand.

Courses in Classical Literature

C161. 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. S
C362. Introduction to 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.
C363. Introduction to Greek Literature, 3 credits. Readings in English translation. A survey of some of the major works of Greek literature, including, for example, Homer’s Iliad, Aeschylus’ Oresteia, Sophocles’ Oedipus Rex, and Plato’s Republic. On demand.
Courses

F100. Practice in Reading and Translating French. A non-credit course, primarily for graduate students needing assistance in preparing for their Ph.D. reading requirement examination. On demand.


F102. Beginning French. 4 credits. Prerequisite: French 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. Attendance in the language laboratory required. F,S.

F201. Second-Year French. 4 credits. Prerequisite: French 102, or equivalent. Review of the structure of the language; readings in French, practice in oral and written expression. F.

F202. Second-Year French. 4 credits. Prerequisite: French 201 or equivalent. Review of the structure of the language; readings in French, practice in oral and written expression. S.

F301. Third-Year French. 3 credits. Prerequisite: French 202 or equivalent. Grammar review and introduction to literature. Emphasis on reading and writing skills. F.

F302. Third-Year French. 3 credits. Prerequisite: French 301 or equivalent. Grammar review and introduction to literature. Emphasis on reading and writing skills. S.


F305. French Conversation and Culture. 2 credits. Prerequisite: French 202 or consent of instructor. A conversational approach to civilization and contemporary culture. Emphasis on oral skills. F.

F306. French Conversation and Culture. 2 credits. Prerequisite: French 202 or consent of instructor or French 305. Contemporary world issues from a French perspective. S.

F307. A Social and Cultural History of Quebec. 3 credits. Prerequisites: French 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. S/U grading only. On demand.

F340. Business French. 3 credits. Prerequisite: French 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.

F371. History of French Literature, 3 credits. Prerequisite: French 302 or consent of instructor. French literature from its origins to 1700; representative works with lectures, outside readings and reports. On demand.

F372. History of French Literature, 3 credits. Prerequisite: French 302 or equivalent. French literature from 1700 to the present day; representative works with lectures, outside readings and reports. On demand.

F373. French-Canadian and Quebec Literature and Thought, 3 credits. Prerequisites: French 302. A survey of French-Canadian and Quebec authors who express the consciousness and universal themes associated with being French in North America. On demand.


F471. Seminar in French, 1-2 credits. Prerequisite: Any one of French 371, 372, 373. Advanced work in French language, literature or culture. May be repeated up to 12 credits. On demand.

F490. Individual French Readings, 1-3 credits. Prerequisite: French 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 (G300-400) course work: G304, G307, G308, G407, G408, and two additional courses (G312, G403, G404, G406, G409, G413, LANG 318, or LANG 319).

In addition, at least eight credit hours of course work in fields related to German approved by the faculty advisor in Languages are required.

A minor in German consists of at least twelve credit hours: G307, G308, and two additional courses (G304, G312, G340, LANG 318, or LANG 319).

Students interested in business may obtain a minor in French by taking F301, F303, F306, and a minimum of 2 additional credit hours selected from Upper Division courses for a total of 14 credits.

Students interested in business may obtain a minor in French by completing G307, G308, G340, and one additional course (G304, G312, LANG 318, or LANG 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

G100. Practice in Reading and Translating German. A non-credit course, primarily for graduate students needing assistance in preparing for their Ph.D. reading requirement examination. On demand.

G101. Beginning German. 4 credits. Fundamentals of German grammar, oral use of the language and reading of easy German. F,S.

G102. Beginning German. 4 credits. Prerequisite: German 101 with a grade of C or better. Continued study of fundamentals of German grammar, oral use of the language and reading of easy German. F,S.

G201. Second-Year German. 4 credits. Prerequisite: German 102, or equivalent. Review of the structure of the language, practice in oral and written expression. F.

G202. Second-Year German. 4 credits. Prerequisite: German 201 or equivalent. Review of the structure of the language, practice in oral and written expression and reading in German. F,S.

G304. 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.

G307. Third Year German. 3 credits. Prerequisite: German 202 or equivalent. Further improvement of the four language skills: listening, writing, reading and speaking. Thorough grammar review. F.

G308. Third Year German. 3 credits. Prerequisite: German 307 or equivalent. Further improvement of the four language skills: listening, writing, reading and speaking. Thorough grammar review. S.

G312. Topics in German Culture. 3 credits. Prerequisite: German 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. S/U grading only. On demand.

G340. Business German. 3 credits. Prerequisite: German 307. Business German vocabulary and terminology. Readings and discussions on current business topics. Special consideration to intercultural communication relevant to international business operations. S.

G403. German Film. 3 credits. Prerequisite: German 308 or equivalent. Survey of the major contributions to “New German Cinema (1970’s to 1990’s).” Attention to film as an artistic medium and to the cinematic representation of German history and culture. S.

G404. Topic in German Literature. 3 credits. Repeatable to 9 credits. Prerequisite: German 308 or equivalent. Topics vary: Literary periods, literary genres, individual authors, or interdisciplinary projects. Repeatable when topics vary. S.
G406. German Literature in Translation. 3 credits, repeatable to 9 credits. Survey of German literature in English translation. Each time the course is offered a different literary period or genre will be studied. Repeatable when topics vary. S/F.

G407. Fourth-Year German. 3 credits. Prerequisite: German 308. Continuing and strengthening the skills practiced in third year German. F.

G408. Fourth-Year German. 3 credits. Prerequisite: German 407. Continuing and strengthening the skills practiced in third year German. S.

G409. 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/S.

G413. Advanced German Grammar Review. 3 credits. Prerequisite: German 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/S.

G490. Individual German Readings. 1-3 credits. May be repeated to a total of six hours. Prerequisite: German 308 or equivalent. May be taken only with the consent of the department. F/S.

Italian

I101. Beginning Italian. 4 credits. Course seeks to develop students’ ability to speak, write and comprehend functional Italian through the fundamentals of grammar and to present aspects of Italian culture and civilization. On demand.

I102. Beginning Italian. 4 credits. Prerequisite: Italian 101 with a grade of C or better. Continued study of pronunciation and fundamentals of grammar, application of oral, written, and comprehensive skills, continued exploration of Italian culture and civilization. On demand.

Norwegian

A major in Norwegian includes the following Upper Division courses: N301, N302, N401, N402; a minimum of 8 credit hours selected from N403, N404, and N490; and at least 8 credit hours of approved course work in related fields.

A minor in Norwegian includes N301, N302, and N401 or N402, plus a minimum of one additional credit hour in Upper Division Norwegian courses.

Courses

N101. Beginning Norwegian. 4 credits. Introduction to the basic Norwegian language: reading, writing, speaking and listening; fundamentals of grammar. Language laboratory attendance required. F/S.

N102. Beginning Norwegian. 4 credits. Prerequisite: Norwegian 101 with a grade of C or better. Continued study of pronunciation and fundamentals of grammar, application of oral, written, and comprehensive skills, continued exploration of Italian culture and civilization. On demand.

N201. Second-Year Norwegian. 4 credits. Prerequisite: Norwegian 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/S.

N202. Second-Year Norwegian. 4 credits. Prerequisite: Norwegian 201 or equivalent. Selected cultural and literary readings, continued review of the structure of the language and development of language skills. F/S.

N301. Advanced Norwegian. 3 credits. Prerequisite: Norwegian 202 or equivalent. Reading of selected works by leading Norwegian authors, interpretation and discussion. F/S.

N302. Advanced Norwegian. 3 credits. Prerequisite: Norwegian 301 or equivalent. Reading of selected works by leading Norwegian authors, interpretation and discussion. 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: Language 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. S/U grading only. On demand.

R490. 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: S303 or S304, S307, S308, S309, S310, S311, S408, S409, S410, S440, 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: S303, S304, S307, S308, S309, S310, S311, S408, S409, S440, and a minimum of six credit hours selected from other Upper Division courses (300/400 level). A Spanish minor consists of S303, S307, and three courses from among S310, S311, S408, and S409, 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

S101. Beginning Spanish. 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. Language laboratory attendance required. F/S.

S102. Beginning Spanish. 4 credits. Prerequisite: Spanish 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. Language laboratory attendance required. S/F.

S201. Second-Year Spanish. 4 credits. Prerequisite: Spanish 102 or equivalent. Review of the structure of the language, readings in Spanish, practice in oral and written expression. F/S.

S202. Second-Year Spanish. 4 credits. Prerequisite: Spanish 201 or equivalent. Review of the structure of the language, readings in Spanish, practice in oral and written expression. F/S.

S303. Spanish Grammar Review. 3 credits. Prerequisite: Spanish 202 or equivalent 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. F.

S304. Spanish Phonetics. 3 credits. Prerequisite: Spanish 202 or equivalent or permission of instructor. A scientific approach to the pronunciation and enunciation of Spanish. On demand.

S307. Literary Analysis. 3 credits. Prerequisite: Spanish 202 or equivalent or permission of instructor. An introduction to the analysis of Hispanic literature, with particular emphasis on poetry, novel, and drama. F/S.

Russian

A minor in Russian includes R301 and R302, plus a minimum of four additional credit hours from among: R161, R162, R490, Lang 102, 103, 111, 130, and 149. With the permission of the department, other relevant courses may be elected to fulfill the requirements for a minor in Russian.
S308. Spanish Conversation. 3 credits. Prerequisite: Spanish 202 or equivalent. Practice in a variety of forms of oral Spanish. F

S309. Spanish Composition. 3 credits. Prerequisite: Spanish 303 or permission of instructor. Practice in a variety of forms of written Spanish. S

S310. Spanish Civilization and Culture. 3 credits. Prerequisite: Spanish 202 or equivalent or permission of instructor. Readings, lectures and discussions in Spanish civilization and culture. On demand.

S311. Spanish American Civilization and Culture. 3 credits. Prerequisite: Spanish 202 or equivalent or permission of instructor. Readings, lectures and discussions in Spanish American civilization and culture. 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. S/U grading only. On demand.

S406. History of Spanish Literature. 3 credits. Prerequisite: Spanish 307 or permission of instructor. A study of the development of the peninsular literary tradition from the Middle Ages to the present. With lectures, reading and analysis of representative texts. F-S

S409. History of Spanish American Literature. 3 credits. Prerequisite: Spanish 307 or permission of instructor. Literature of the Spanish American countries written in the Spanish language, from the Conquest to the contemporary period. With lectures and readings. F-S

S410. Cervantes and the Golden Age, 3 credits. Prerequisite: Spanish 408 or permission of instructor. A study of the writings of Cervantes and his contemporaries. Topic will vary. Repeatable with new topic. On demand.


S414. Topics in Spanish Literature. 3 credits. Prerequisite: Spanish 408. Selected topics dealing with author, period, movement or genre of peninsular literature excluding the Golden Age. Repeatable with different topic. On demand.

S416. Topics in Spanish American Literature. 3 credits. Prerequisite: Spanish 409 or permission of instructor. Topics, on an alternating basis, include: Pre-Columbian Literature and Culture, Boom and Postboom Narrative, Chronicles of the Conquest, Non-conformist 20th Century Novel, Novel of the Mexican Revolution. Repeatable with different topic. On demand.

S440. Senior Seminar. 3 credits. Prerequisite: Spanish 408 and 409 and permission of the instructor. Literature. Required of seniors, who will present a research paper from the course to the Spanish faculty as part of graduation requirements.

S461. Seminar in Hispanic Linguistics. 3 credits. Prerequisite: Spanish 303 or 304 or permission of instructor. Advance 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.

S462. Seminar in Hispanic Literary Traditions. 3 credits. Prerequisite: Spanish 408 or 409 depending on topic or permission of instructor. Advanced work on a specific aspect of the Hispanic literary tradition. Repeatable with different topic. On demand.

S490. 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

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 English 207.

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.

218. 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.

219. 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. S/U grading only.

331. Foreign Language 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. Colloquium in Language and Letters. 1 to 3 credits, may be repeated to a maximum of 12 hours. 333a. regular grading; 333b. S/U grading. Prerequisites: Language 102 or equivalent. Special subjects to be announced. F-S

399. 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

499. 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
(Ling)

At present, the University has no undergraduate degree programs in linguistics. It is, however, possible for students to have a concentration in languages and linguistics as English majors. (See also the Graduate catalog for the M.A. program in Linguistics and for graduate-level courses not listed here.)

Other courses which carry graduate credit are offered through the Department of English. English 417, 419, and 522 are recommended.

Linguistics courses are taught by the Summer Institute of Linguistics (SIL) during a nine-week summer session. Students wishing to take SIL courses should apply directly to SIL, preferably by April 15 (April 1 for non-U.S. citizens). Write to the SIL Admissions Office, 7500 W. Camp Wisdom, Dallas, TX 75236 (214/709-2400 ext. 2236) for an SIL catalog, application forms, and further information about the program. During the summer, further information is available from SIL (777-8105). At other times, information about SIL is available from the Office of University College and Summer Sessions (see especially the Summer Session Bulletin) and the Department of English; prospective students should obtain (from either of these offices) the handout entitled “The Summer Institute of Linguistics, University of North Dakota Session: A Guide for UND Students.”

Other departments also offer undergraduate courses relevant to linguistics: CS223; English 207, 309, 361, 362, 370, 417, 419, 442; Language 304, 413 (French, German, Spanish).

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. 4 credits. Fundamentals of analyzing the grammatical and morphological structures of languages; analytical skills developed through graded problems based on a wide variety of languages. 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. 1 credit. 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

Management
(Mgmt)

S. Moser (Chair), Bronson, Chong, Dougan, Eberhardt, Lawrence, Park, Vilton, Yang, and Zahrly

The mission of the Management Department of the College of Business and Public Administration is to provide practical and innovative management courses for undergraduate management and other business-related programs. Management courses are designed to provide students with the knowledge and skills necessary to succeed in the dynamic and competitive business environment. The department offers a range of courses that cover a variety of topics, including financial management, marketing, human resource management, and leadership. These courses are taught by experienced professionals who bring real-world experience and insights into the classroom. The department is committed to preparing students for success in their future careers by providing them with the tools and skills they need to be effective leaders and managers in today’s business world.
nness majors and graduate students. The Management Department will expose students to the 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 department’s faculty will be dedicated, motivated, caring, experienced, and academically or professionally qualified, and will search out and use current instructional resources and methods. The faculty will also engage in basic, applied, and/or instructional research and provide service to the University, business, professional, and local communities.

The Management Department 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 the individual with an overall understanding of the basic functions of management as well as appropriate skills and problem solving methods. The education program initiates the student into the complexities of organizational variables such as human resources and materials or physical factors, and provides the student with appropriate frameworks for examining various institutions and environments 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.

B.B. A. WITH MAJOR IN MANAGEMENT

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.
II. The College of Business and Public Administration Requirements, see page 39.
III. The Following Curriculum: (Suggested Sequence)

<table>
<thead>
<tr>
<th>Freshman</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 101, 102*</td>
<td>Composition I, II</td>
<td>(3)</td>
</tr>
<tr>
<td>Psci 101</td>
<td>American Government I</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 104</td>
<td>Finite Mathematics</td>
<td>(3)</td>
</tr>
<tr>
<td>Psy 101</td>
<td>Introduction to Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>Fundamentals of Public Speaking</td>
<td>(3)</td>
</tr>
<tr>
<td>Comm 161*</td>
<td>Introduction to Sociology</td>
<td>(3)</td>
</tr>
<tr>
<td>or Anth 171*</td>
<td>Introduction to Cultural Anthropology</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 204*</td>
<td>Survey of Calculus</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>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>Acc 208, 209*</td>
<td>Elements of Accounting I &amp; II</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 210*</td>
<td>Introduction to Business and Economic Statistics</td>
<td>(3)</td>
</tr>
<tr>
<td>BVED 217*</td>
<td>Fund. of Management Information Systems</td>
<td>(4)</td>
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<tr>
<td>or Lab Science</td>
<td>(4)</td>
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<table>
<thead>
<tr>
<th>Junior Year</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Acc 315</td>
<td>Business in the</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 303</td>
<td>Money and Banking</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>Principles of Marketing</td>
<td>(3)</td>
</tr>
<tr>
<td>BVED 320</td>
<td>Business Communications</td>
<td>(3)</td>
</tr>
<tr>
<td>Fin 310*</td>
<td>Principles of Financial Management</td>
<td>(2)</td>
</tr>
<tr>
<td>or Problems in Financial Management</td>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td>Mgmt 302*</td>
<td>Human Resource Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 309*</td>
<td>Quantitative Approaches to Business Decisions</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 310*</td>
<td>Organizational Behavior</td>
<td>(3)</td>
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</tbody>
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<table>
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<tr>
<th>Senior Year</th>
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<tbody>
<tr>
<td>Mgmt 400*</td>
<td>Organizational Theory and Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 475*</td>
<td>Strategic Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Plus Major Electives Requirements: Minimum of 8 elective credits from the following:</td>
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<tr>
<td>6 credits</td>
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<tr>
<td>Mgmt 395</td>
<td>Special Topics</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 405</td>
<td>Entrepreneurship and Small Business Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 407</td>
<td>Wage and Salary Administration</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 408</td>
<td>Issues in Human Resource Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 409</td>
<td>Union Management Relations</td>
<td>(3)</td>
</tr>
<tr>
<td>Mgmt 420</td>
<td>Multinational Management</td>
<td>(3)</td>
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<tr>
<td>2-4 credits</td>
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</tr>
<tr>
<td>Acc 207</td>
<td>Managerial Accounting</td>
<td>(2)</td>
</tr>
<tr>
<td>Acc 218</td>
<td>Computer Applications in Business</td>
<td>(2)</td>
</tr>
<tr>
<td>Acc 301</td>
<td>Intermediate Accounting I</td>
<td>(4)</td>
</tr>
<tr>
<td>BVED 305</td>
<td>Microcomputer Applications for Business</td>
<td>(3)</td>
</tr>
<tr>
<td>BVED 308</td>
<td>Office Management</td>
<td>(3)</td>
</tr>
<tr>
<td>BVED 315</td>
<td>Introduction to Records Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 308*</td>
<td>Intermediate Microeconomic Theory</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 309*</td>
<td>Intermediate Macroeconomic Theory</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 310</td>
<td>Intermediate Business and Economic Statistics</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 341</td>
<td>Labor Economics and Labor Relations</td>
<td>(3)</td>
</tr>
<tr>
<td>Fin 360</td>
<td>Capital Market Financing and Investment Strategies</td>
<td>(3)</td>
</tr>
<tr>
<td>Mkt 310</td>
<td>Buyer Behavior</td>
<td>(3)</td>
</tr>
<tr>
<td>Mkt 315*</td>
<td>Retail Management</td>
<td>(3)</td>
</tr>
<tr>
<td>Mkt 320</td>
<td>Marketing Research I &amp; Design</td>
<td>(3)</td>
</tr>
<tr>
<td>Mkt 430</td>
<td>Small Business Projects</td>
<td>(3)</td>
</tr>
<tr>
<td>Plus</td>
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<tr>
<td>14 hours of non-business electives and 11 hours of business or non-business electives to bring the total hours to 125.</td>
<td></td>
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</tr>
</tbody>
</table>

*Indicates course has prerequisite. Check course descriptions.

IV. Transfer credit is not allowed for Mgmt 475, Strategic Management, the capstone course for business degree programs at UND.

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 leading and organizing. 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 information systems, international management, and business ethics and social responsibility. F.S

301. Production Management, 3 credits. Prerequisite: Econ 210. This course teaches application of quantitative methods for solution of many problems concerning the production of goods and services. Specific problem areas investigated are: demand forecasting, capital budgeting, resource allocation, production scheduling, performance standards, inventory control, product and service design, and quality assurance. F.S

302. Human Resource Management, 5 credits. Prerequisites: Econ 210 and Mgmt 300. A survey of the concepts, procedures, and programs associated with Human Resources Management in organizations. It includes an overview of the basic management functions as these are linked to the execution of personnel functions of employment, 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, motivation, work groups, authority, 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. Specific areas included are: decision theory, simulation, inventory models, linear programming, queuing, economic evaluation, game theory and Markov process. F.S/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

337. Cooperative Education in Management, 1-6 credits, repeatable to a maximum of 12 credits. Prerequisites: Mgmt 300, 302, 2.50 GPA, and consent of coordinator. On-the-job compensated experience in general management or management of human resources. SU/GR grading only. F.S/S

359. Special Topics, 3 credits. Specific topics will 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.

400. Organizational Theory and Analysis, 3 credits. Prerequisite: Mgmt 310. The course is designed to acquaint students with some of the alternative ways in which
Marketing
(MRKT)

S. Nelson (Chair), Askim, Bateman, Elbert, and Faircloth

The Department of Marketing 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 Department of Marketing is: To provide a high quality marketing program which attracts a diverse group of achievement-oriented students as a foundation for student, University, and state advancement. The Department strives to achieve the following objectives: (1) To educate its students to be literate and competent in conducting marketing operations locally, regionally, nationally, and internationally, (2) To cooperate with local and state businesses and actively seek opportunities for business and student interaction, (3) To ensure the integration of current business issues and delivery systems throughout the marketing curriculum, and (4) To provide its faculty and support system conduits to the encouragement of intellectual contributions that are consistent with the mission of the Department, College, and University.

College of Business and Public Administration

B.B.A. WITH MAJOR IN MARKETING

Required 125 hours, including:


II. The College of Business and Public Administration Requirements. See page 39 and including:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc 200, 201</td>
<td>Elements of Accounting I &amp; II</td>
</tr>
<tr>
<td>Econ 201</td>
<td>Principles of Microeconomics</td>
</tr>
<tr>
<td>Econ 202</td>
<td>Principles of Macroeconomics</td>
</tr>
</tbody>
</table>

Econ 210 | Introduction to Business and Economic Statistics | (3) |

Econ 303 | Money and Banking | (3) |

BVED 217 | Fundamentals of Management | (3) |

Acct 315 | Business in the Legal Environment | (3) |

Math 104, 201 | Finite Mathematics, Survey of Calculus | (6) |

Mgmt 300 | Principles of Management | (3) |

Mgmt 301 | Production Management | (3) |

Fin 310 | Principles of Financial Management | (3) |

Fin 310L | Problems in Financial Management | (1) |

Mgmt 475 | Strategic Management | (3) |

Mrkt 301 | Principles of Marketing | (3) |

Psyc 101 | American Government I | (3) |

Comm 161 | Fundamentals of Public Speaking | (3) |

One course selected from the following:

Poy 101 | Introduction to Psychology | (3) |

Soc 101 | Introduction to Sociology | (3) |

Anth 171 | Introduction to Cultural Anthropology | (3) |

Major in Marketing

Mrkt 310 | Buyer Behavior | (3) |

Mrkt 325 | International Marketing | (3) |

Mrkt 326 | Marketing Research I | Design | (3) |

Mrkt 420 | Marketing Research II | Applications | (3) |

Mrkt 450 | Marketing Management | (3) |

Complete at least 12 credits from the following:

No more than a total of 3 credits from Mrkt 337, Mrkt 380, and Mrkt 396 may be used to satisfy this requirement.

Mrkt 311 | Personal Selling | (3) |

Mrkt 312 | Advertising | (3) |

Mrkt 315 | Retail Management | (3) |

Mrkt 337 | Co-Operative Education in Marketing | (1-8) |

Mrkt 380 | Internship in Marketing | (1-3) |

Mrkt 396 | Directed Studies in Marketing | (1-3) |

Mrkt 411 | Sales Management | (3) |

Mrkt 412 | Promotional Strategy | (3) |

Mrkt 425 | Current Perspectives in Global Marketing | (3) |

Mrkt 430 | Small Business Projects | (3) |

Mrkt 440 | Special Topics in Marketing | (3) |

Courses

201. Personal Marketing. 2 credits. Introduction of the marketing concept and its relevance to individuals in various career tracks. Particular emphasis will be placed on the application of the marketing concept in professional career initiation and on the development and delivery of marketing presentations. This course will also include an overview of marketing ethics and its impact on the individuals and the society. F, S

301. Principles of Marketing. 3 credits. Required of all students in Business and Public Administration. Prerequisite: Econ 201. An overview of the scope and nature of market exchange and the buyer’s pivotal role. F, S

310. Buyer Behavior. 3 credits. Prerequisite: Mrkt 301. Theoretical and applied analysis of consumer and organizational buying behavior. F, S

312. Advertising. 3 credits. Prerequisite: Mrkt 301. Methods for designing an advertising campaign. Special emphasis on buyer perceptions, theories of communication and learning, and their relation to message, media, and vehicle selection. F, S

315. Retail Management. 3 credits. Prerequisites: Mrkt 301, and Accct 201. Application of marketing and financial principles to the planning and execution of retail management. Includes analysis of relevant institutions and interest groups. F-S

316. Visual Merchandising. 3 credits. Prerequisite: Mrkt 301. Creation of a retail store environment through merchandise presentation, store layout and design. Group store design projects will be completed. On demand.

320. Marketing Research I | Design. 3 credits. Prerequisites: Mrkt 301, and Econ 210. The research process from a marketing perspective. Addresses problem formulation, research design, methodology, and appropriate statistical methods. F, S

325. International Marketing, 3 credits. Prerequisite: Mrkt 301. Fundamentals of conducting marketing operations across national boundaries; market potential estimations, entry strategies, program management and control. F-S

337. 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. S/U grading only. F, S, SS

380. Internship in Marketing, 1-3 credits. Prerequisites: Mrkt 301, and Consent of Chair. Compensated, practical experience with selected participating firms. S/U grading only. F, S, SS

396. Directed Studies in Marketing, 1-3 credits. Prerequisites: Mrkt 301, and Consent of Instructor. Research in some aspect of marketing. Written reports and collateral readings. F, S, SS

411. Sales Management. 3 credits. Prerequisite: Mrkt 301. The practice of sales management including sales force recruiting, training, organization, motivation, compensation, and evaluation. S
412. Promotional Strategy, 3 credits. Prerequisite: Mkrt 312. Relationship of marketplace activities to promotional processes; integration of promotional tools into marketing strategy. F
415. Retail Buying, 3 credits. Prerequisite: Mkrt 315. Analysis of buying practices and techniques, with a focus on the impact of consumer buying power, resources, governmental regulations, merchandise planning and control, pricing, purchase negotiations and open-to-buy. On demand.
420. Marketing Research II: Application, 3 credits. Prerequisite: Mkrt 320. Application of procedures appropriate for the analysis and interpretation of marketing data. F-S
425. Current Perspectives in Global Marketing, 3 credits. Prerequisite: Mkrt 301. 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.
430. Small Business Projects, 3 credits. Prerequisite: Mkrt 330, 320, and Senior Standing. A student course addressing the firm’s micro and macro environments from a strategic marketing decision making perspective. F-S

Mathematics
(Math)
D. Uherka (Chair), Collings, Dearden, Dunnigan, Gilsdorf, Gregory, Harris, Iiams, Khavanin, Metzger, Millsapugh, Prigge, Richards, and Wells

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 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 provides a test center for Actuarial Examinations and offers several courses which enable the student to prepare for them.

Students may pursue either the B.S. or B.A. degree with a major in mathematics through the College of Arts and Sciences. Teacher certification is possible with these degrees provided appropriate requirements are met.

Elective courses 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 211 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 cancelled from the class by the instructor.

College of Arts and Sciences
B.A. OR B.S. WITH MAJOR IN MATHEMATICS

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. Non-Mathematics Requirements: Computer Science 110 and a writing course above those required under I. (Possible courses might be English 209, 203, 305 or RVED 320).

III. The Following Curriculum:

36 major hours including:
Math 211, 212, 213.............Calculus I, II, III.................................(12)
Math 342......................Elementary Linear Algebra......................(3)
or
Math 442..............Linear Algebra..............................................(3)
Math 351......................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).........................................................(6)

Two Semester Sequences
Math 208 & 408..............Discrete Mathematics & Discrete Structures
Math 352 & 412.............Advanced Engineering Mathematics I
Math 409 & 435..............Geometry & Number Theory
Math 431 & 432.............Statistical Theory I & II
Math 441 & 442.............Abstract Algebra & Linear Algebra
Math 461 & 462.............Numerical Analysis I & II

Students wishing certification in secondary teaching must also:

a. complete the EHD program in Secondary Education. See page 77.
b. choose both the Math sequences of:
  1. Math 441 & 442
  2. Math 409 & 435
c. complete Math 208, 321, and 330.

Students planning to attend 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 Biology.

MINOR IN MATHEMATICS

Required 20 hours, including:
Math 211, 212, 213.............Calculus I, II, III.................................(12)
All electives must be chosen from courses numbered 208 and above, not including 277, 377, or 477.

MINOR IN STATISTICS (Plan A)
T. Harris (Advisor)

Requires 3 semesters of calculus (Math 211, 212, 213) as prerequisite.

Required: 9 hours, including:
*MATH 421, 422............Statistical Theory I, II.................................(6)
3 hours from:
Biol 470..............Biometry.................................................................(3)
CTL 513.............Basic Computer Applications in Education..............(3)
CTL 514..............Small System Computer.................................(3)
CTL 516.............Applications in Education............................................(3)
CTL 517.............Statistics I.................................................................(3)
*CHE 515..............Design of Engineering Experiments.................................(3)
Econ 310 .............Intermediate Business and Economic Statistics........(3)
Econ 510.............Econometrics..............................................................(3)
*EE 411.............Communications Engineering.................................(3)
*Math 321.............Applied Statistics.........................................................(3)
MINOR IN STATISTICS (Plan B)

Requires Math 104, Finite Mathematics, and Math 204, Survey of Calculus, as prerequisites.
Required: 12 hours from:

- Biol 470. Biometry
- CTL 513. Basic Computer Applications in Education
- CTL 514. Small System Computer Applications in Education
- CTL 516. Statistics II
- CTL 517. Non-parametric Statistics
- *Chi515. Design of Experiments

Note: PTP* indicates an appropriate score in the Placement Testing Program (PTP) is required.

*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/U grading only. F.S.S.

103. College Algebra. 3 credits. Prerequisite: PTP* or Math 102. Sections meet 5 days per week for students determined eligible by the Math Department. Polynomial functions, inverse functions, exponential and logarithmic functions, simple conics, systems of equations, determinants, arithmetic and geometric sequences, limits, continuity, differentiation, integration, partial differentiation, infinite series, and models. F.S.S.

104. Finite Mathematics. 3 credits. Prerequisites: PTP* or Math 102. Mixture of topics that together form a calculus of finite mathematics, including: linear equations and matrices, linear programming, mathematics of finance, and probability. F.S.S.

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.S.

111. Precalculus Numerical Methods. 4 credits. Prerequisites: ACT score of 26 or greater and three years of high school math (Algebra I and II); or Math 103 and 104. An introduction to numerical methods at the precalculus level. Topics include root finding, computing areas, approximations of pi and e. Use of constructive proofs to develop computer algorithms will be emphasized. Concepts useful in calculus will be stressed including a review of algebra and trigonometry. Computer labs will be used throughout the course. On demand.

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.

204. Survey of Calculus. 3 credits. Prerequisite: PTP* or Math 103 or 104. A nonrigorous introduction to differential and integral calculus. Topics include limits, continuity, differentiation and integration techniques, and applications. F.S.S.

208. Discrete Mathematics. 3 credits. Prerequisites: PTP* or Math 103. Introduction to Set Theory, Functions and Relations, Permutations and Combinations, Logic, Boolean Algebra, Induction, Difference Equations. Other topics from Graphs, Finite Automata and Formal Languages. F.S.S.

211. Calculus I. 4 credits. Prerequisites: PTP* or (Math 103 and 105) or Math 111. Limits, continuity, differentiation, Mean Value Theorem, integration, Fundamental Theorem of Calculus. F.S.S.

212. Calculus II. 4 credits. Prerequisite: Completion of Math 211 with a grade of C or better or permission of the Mathematics Department. Techniques and applications of integration, exponential and logarithmic functions, parametric equations, infinite sequences and series. F.S.S.

213. Calculus III. 4 credits. Prerequisite: Math 212. Multivariable and vector calculus including partial derivatives, multiple integration, line and surface integrals, Green’s Theorem, Stokes’ Theorem, the Divergence Theorem. F.S.S.

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. F.S.

321. Applied Statistical Methods. 3 credits. Prerequisite: Math 212. Introductory statistics 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.S.

337. Cooperative Education. 15 completed credits in Math including Math 211, 212, 213, in addition to the PTP requirements. A practical work experience with an employer closely associated with the student’s academic area. 1-8 credits repeatable to 18. Arranged by mutual agreement among student, department, and employer. A maximum of 6 cooperative education credits may be applied against requirements for a Math major. S/U grading only. F.S.S.

342. Elementary Linear Algebra. 3 credits. Prerequisite: Math 212. A practical treatment of systems of linear equations, finite dimensional vector spaces, linear transformations, determinants, matrices, eigenvalues, and eigenvectors. F.S.

351. Elementary Differential Equations. 3 credits. Prerequisite: Math 213 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.S.


353. Advanced Engineering Mathematics II. 3 credits. Prerequisite: Math 351. An introduction to several topics in applied mathematics, such as numerical analysis, statistics and complex variables. F.S.

377. Geometry for Elementary Teachers. 1-3 credits. For elementary education majors only. Experimental and inductive discovery in building geometric concepts at the elementary school level. On demand.

403. Theory of Probability. 3 credits. Prerequisite: Math 213. Sets, sample spaces, discrete probability, distribution functions, density functions, characteristic functions, study of normal, Poisson, binomial and other distributions with applications. S.

405. Selected Topics in Mathematics. 1-3 credits. Prerequisite: permission of the Mathematics Department. May be repeated to maximum of 6 credits. On demand.

408. Discrete Structures. 3 credits. Prerequisites: Math 206 and Math 212. This course introduces the techniques and types of reasoning needed in combinatorial problem-solving. The course includes topics from graph theory and combinatorics. S.

409. Geometry. 3 credits. Prerequisite: Math 212. 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. F.


415. Topics in Applied Mathematics. 1-3 credits. Prerequisite: Math 213 and consent of instructor. An introduction to selected areas in applied mathematics chosen from a variety of topics including: Applied Mathematics, difference equations, linear programming, modeling and simulation, operations research, optimization, partial differential equations and computers in mathematics. Topics to be considered will be illustrated with examples and practical applications. May be repeated for credit with consent of instructor up to a maximum of six credits. On demand.

416. Topics in Statistics. 1-3 credits. Prerequisites: An elementary statistics course and either Math 204 or Math 211, 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 during a semester will be limited to permit greater depth of coverage and sufficient practical illustrations. May be repeated for credit with consent of instructor up to a maximum of six credits. On demand.

421. 422. Statistical Theory I and II. 3 credits each. Prerequisite: For 421, Math 213; for 422, Math 421. 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 regression by least squares, maximum likelihood estimation, Neyman-Pearson lemma, likelihood ratio test, power function, chi-square tests, change of variable; Y = f(X) tests, one- and two-way ANOVA, nonparametric methods. F.

431, 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, partial differentiation, infinite series, power series and vector analysis. F.S.
Mechanical Engineering

D. Moen (Chair), Bandypathay, Bibel, Grewal, Ness, Stanlake, and Tolbert

The Mechanical Engineering Department strives to prepare graduates to function effectively as mechanical engineers in a wide spectrum of industries. The required curriculum develops basic science and mathematics tools in the areas of thermal sciences, mechanical design, and manufacturing processes. Technical electives provide students an opportunity to enhance skills in a selected area. Teamwork and communications skills are developed through laboratory courses, seminar, and team design projects. Throughout the program, students are encouraged to develop lifelong learning skills. Students who excel academically are also well qualified to pursue graduate work in Mechanical Engineering or a related field.

School of Engineering and Mines

BS. IN MECHANICAL ENGINEERING

Required 138* hours including:

I.  General Education Requirements, see pages 27-30.

II. The Following Curriculum:

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 105</td>
<td>General Chemistry</td>
<td>(4)</td>
</tr>
<tr>
<td>Engl 101</td>
<td>Composition I</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 209</td>
<td>Technical &amp; Business Writing</td>
<td>(3)</td>
</tr>
<tr>
<td>Engr 101</td>
<td>Intro. to Engineering Design</td>
<td>(2)</td>
</tr>
<tr>
<td>Engr 102</td>
<td>Descriptive Geometry</td>
<td>(2)</td>
</tr>
<tr>
<td>Engr 201</td>
<td>Computer Applications in Engineering</td>
<td>(2)</td>
</tr>
<tr>
<td>Math 211, 212</td>
<td>Calculus I, II</td>
<td>(4) (4)</td>
</tr>
<tr>
<td>Phys 205</td>
<td>General Physics</td>
<td>(4)</td>
</tr>
<tr>
<td></td>
<td>Arts and Humanities (See page 45)</td>
<td>(3) (3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 300</td>
<td>Analytical Mechanics (Statics)</td>
<td>(2)</td>
</tr>
<tr>
<td>CE 301</td>
<td>Mechanics of Materials I</td>
<td>(3)</td>
</tr>
<tr>
<td>CE 305</td>
<td>Analytical Mechanics (Dynamics)</td>
<td>(3)</td>
</tr>
<tr>
<td>Econ 201</td>
<td>Principles of Microeconomics</td>
<td>(3)</td>
</tr>
<tr>
<td>EE 206</td>
<td>Electrical Engineering</td>
<td>(3)</td>
</tr>
<tr>
<td>Math 213</td>
<td>Calculus III</td>
<td>(4)</td>
</tr>
<tr>
<td>Math 351</td>
<td>Elem. Differential Equations</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 203</td>
<td>Mechanical Design</td>
<td>(3)</td>
</tr>
<tr>
<td>Phys 206</td>
<td>General Physics</td>
<td>(4)</td>
</tr>
<tr>
<td>Phys 208</td>
<td>or General Physics</td>
<td></td>
</tr>
<tr>
<td>Chem 106</td>
<td>General Chemistry</td>
<td>(4)</td>
</tr>
<tr>
<td></td>
<td>(See page 45)</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>ME 301</td>
<td>Materials Science</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 306</td>
<td>Fluid Mechanics</td>
<td>(3)</td>
</tr>
<tr>
<td>Engr 460</td>
<td>Engineering Economy</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 311</td>
<td>Manufacturing Processes I</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 322</td>
<td>Kinematics and Dynamics of Machines</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 341, 342</td>
<td>Thermodynamics</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 401</td>
<td>Dynamic Systems Analysis</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 413</td>
<td>Engineering Materials</td>
<td>(2)</td>
</tr>
<tr>
<td>ME 421</td>
<td>Machine Component Design</td>
<td>(3)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior Year</th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 318</td>
<td>Manufacturing Processes II</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 474</td>
<td>Fundamentals of Heat &amp; Mass Transfer</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 480</td>
<td>Mechanical Engineering Seminar</td>
<td>(2)</td>
</tr>
<tr>
<td>ME 483</td>
<td>Mechanical Measurements Lab</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 486</td>
<td>Mechanical Engineering Practice</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 487, 488</td>
<td>Engineering Design</td>
<td>(2) (3)</td>
</tr>
<tr>
<td>Phv 370</td>
<td>M &amp; P: Ethics in Engineering</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 474</td>
<td>Mechanical Engineering</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 465</td>
<td>Fluid Mechanics</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 490</td>
<td>Special Laboratory Problems</td>
<td>(1-5)</td>
</tr>
<tr>
<td>ME 513</td>
<td>Advanced Engineering Materials</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 523</td>
<td>Advanced Machine Design</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 526</td>
<td>Advanced Vibrations</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 529</td>
<td>Advanced Finite Element</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 541</td>
<td>Advanced Thermodynamics</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 545</td>
<td>Fluidized Bed Combustion</td>
<td>(1-4)</td>
</tr>
<tr>
<td>ME 571</td>
<td>Advanced Fluid Mechanics</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 574</td>
<td>Advanced Heat Transfer</td>
<td>(3)</td>
</tr>
<tr>
<td>ME 578</td>
<td>or Special Topics</td>
<td></td>
</tr>
</tbody>
</table>

Courses

203. Mechanical Design Fundamentals. 3 credits. Prerequisite: Engr 101*. Corequisite: Engr 201* and Phys 205* or CE 300*. Academic career plan, computational aids to engineering, shop familiarization analysis of a machine or system, specification, testing 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 105*, Phys 206*. The theory of the structure of matter, the prediction and evaluation of engineering properties of materials. F

306. Fluid Mechanics. 3 credits. Prerequisites: Physics 205*, Math 213*. 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 CE 301*. Corequisite: Engr 460. Descriptive and analytical study of manufacturing methods and economics as they pertain to casting, welding and forming processes. Includes laboratory. S

318. Manufacturing Processes II. 3 credits. Prerequisites: ME 311, 413. Descriptive and analytical study of manufacturing methods and economics as they pertain to machining, metrology and automation. Includes laboratory. F

322. Kinematics and Dynamics of Machines. 3 credits. Prerequisite: Engr 102*, 201*, CE 305*. Analytical and graphical study of motions, velocities, accelerations and forces for design of machine elements such as linkages, cams and gears. F

337. Cooperative Education. 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. SJU grading only. F,S,SS

341. Thermodynamics. 3 credits. Prerequisites: Physics 205*, Math 212*. Fundamental concepts of thermal energy relationships, processes and cycles. F,S

342. Thermodynamics. 3 credits. Prerequisite: ME 341. Real vapors, gas-vapor mixtures, power and refrigeration cycles. S

401. Dynamic System Analysis. 3 credits. Prerequisites: Math 351, CE 305*. 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

413. Engineering Materials. 2 credits. Prerequisite: ME 301. Relationships between materials, manufacture and design of engineering components. S

416. Advanced Manufacturing Processes. 3 credits. Prerequisite: ME 311, 318. Individual projects involving the manufacturing economics and flow charts for selected products and basic technical principles of manufacturing processes. Includes laboratory. On demand.

421. Machine Component Design. 3 credits. Prerequisite: CE 301*, ME 322. 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

423. Computer Aided Design. 3 credits. Prerequisites: Engr 201*, ME 322 and 421. Computer aided design topics including interactive graphics, engineering drafting, solid modeling, design of machine components, numerical methods, simulations, CAD hardware and software. On demand.

426. Mechanical Vibrations. 3 credits. Prerequisite: ME 401. 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: CE 301*. Finite element analysis is introduced as a design tool. Emphasis is given to modeling techniques and application types. Matrix and energy methods are also introduced. On demand.

445. Energy Technology. 3 credits. Prerequisite: ME 342. Study of energy sources, energy conversion systems and related economics. On demand.


451. Heating and Air Conditioning. 3 credits. Prerequisite: ME 474 or concurrent with ME 474. Psychrometrics, heating and cooling loads and analysis of air conditioning systems. On demand.

458. Refrigeration. 3 credits. Prerequisite: ME 342. Mechanical and absorption refrigeration cycles, low temperature refrigerations and properties of refrigerants. On demand.

462. Introduction to Nuclear Engineering. 3 credits. Prerequisites: Math 351, Phys 206, or permission of instructor. Nuclear fission, reactor physics, reactor engineering, radiation protection, nuclear power environmental impact, and nuclear power economics. On demand.

474. Fundamentals of Heat & Mass Transfer. 3 credits. Prerequisites: Math 351, ME 306 and 341. Convection, conduction, radiation, dimensional analysis and design of heat transfer equipment. F


480. Mechanical Engineering Seminar. 2 credits. Prerequisite: Senior standing. Reports and discussions on current developments in mechanical engineering. F

483. Mechanical Measurements Laboratory. 3 credits. Prerequisites: ME 342, 401, 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 474 and 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: Engr 460, ME 342, 421. 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 design alternatives and conduct research, specify constraints. F

488. Engineering Design. 3 credits. Prerequisites: ME 318, 322, 474, 480, 483, and 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 semester. 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.

499. 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

*Course must be completed with a “C” grade or better.

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**Medicine (Med)**

106. Introduction to Health Sciences Professions. 2 credits. Introduction to the roles, values, certification, education, employment and fundamental knowledge and skills related to the health science professions. F,S

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**Microbiology and Immunology (MBio)**

202. Introductory Medical Microbiology Lecture. 3 credits. Prerequisite: Chem 107. Three hours of lecture per week. An introductory medical microbiology course primarily for nursing students, but open to all allied health students with permission of the instructor. The course provides a background in all aspects of microbial agents and diseases. F

202L. Introductory Medical Microbiology Laboratory. 2 credits. Corequisite: MBio 202. Four hours laboratory per week. An introductory laboratory course in the identification and identification of all types of microorganisms with an emphasis on those that cause disease. F

302. General Microbiology Lecture. 2 credits. Prerequisite: Biol 101 or permission of instructor. Two hours lecture per week. An introduction to general microbiology with emphasis on the morphology, classification, and physiology of bacteria, molds, and viruses. The significance of microorganisms in food processing, waste disposal, and in maintaining our environment is discussed. S

302L. General Microbiology Laboratory. 2 credits. Prerequisite or corequisite: MBio 302. Four hours laboratory per week. The growth, isolation, and identification of microorganisms from a variety of sources using procedures such as staining, microscopy, pure culturing, and biochemical tests. S

328. Introduction to Immunology. 2 credits. Prerequisite: BiCh 301 or equivalent. Five week course in immunology beginning the first Monday in August. Eight hours lecture per week. An introduction to the fundamentals in immunology including immunocommunity, humoral and cellular response, hypersensitivity, immunodeficiency, immunogenetics, tolerance and immunodiagnosis. Undergoing revision. Requires consent of the instructor. F

329. Clinical Microbiology Lecture. 2 credits. Prerequisite: MBio 302 or equivalent. Survey of bacterial and fungal infections of humans. F

329L. Clinical Microbiology Laboratory. 2 credits. Prerequisite: MBio 302 or 402 or 508 or equivalent. Corequisite: MBio 402. Methods in the isolation and identification of disease causing microorganisms. F

491. Directed Studies. 1-3 credits. A course designed to provide individual students with the opportunity for creative, scholarly and research activities in microbiology and immunology under the direction of a department faculty member. Open to all students with the consent of the instructor. F,S,SS
Military Science  
(MSci)

J. Pawley (Chair), Hargrove, Holmer, Staples, and Wold

The Army Reserve Officer Training Corps (ROTC) offers a program of instruction designed to mold young men and women into responsible, self-disciplined 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, administration, problem solving, and decision making. Selection for active Army duty and for commissioning as a regular 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 basic camp. Questions concerning placement eligibility should be directed to the Military Science Department. Financial assistance is available in the form of two, three, and four year ROTC scholarships. These scholarships pay tuition, laboratory fees and a flat rate for textbooks and equipment and a modest monthly cost of living allowance. All ROTC scholarship students and each nonscholarship junior and senior are paid a cost of living allowance. The advance course may be taken for credit by any eligible students with prior arrangement through the Department of Military Science. The Military Science Department is housed in the University Armory which contains a library, physical fitness center, and 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 five 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 written communication, military history, human behavior, computer literacy, math reasoning, management*, and national security affairs*.  

* Optional

MINOR IN MILITARY SCIENCE

Required 20 hours, including:

- MSci 301 ............... Military Science III ..................................................(3)
- MSci 302 ............... Military Science III ..................................................(3)
- MSci 401 ............... Military Science IV ...................................................(2)
- MSci 402 ............... Military Science IV ...................................................(2)
- MPER 102 ............... Fitness: Military Physical Conditioning .......................(1)
- Hist 210 ............... Military History ..........................................................(3)
- Hist 219 ............... World War II ..............................................................(3)
- Hist 339 ............... The United States and Vietnam, 1945-1975 ...................(3)
- Hist 411 ............... U.S. Foreign Relations, 1776-1900 .............................(3)
- Hist 412 ............... U.S. Foreign Relations Since 1900 ..............................(3)

and

3 hours from the following:

- PSCI 220 ............... International Politics ..................................................(3)
- PSCI 225 ............... Comparative Politics ..................................................(3)
- Hist 239 ............... World War II ..............................................................(3)
- Hist 339 ............... The United States and Vietnam, 1945-1975 ...................(3)
- U.S. Foreign Relations, 1776-1900 .........................................................(3)
- U.S. Foreign Relations Since 1900 .........................................................(3)

and

3 hours from the following:

- Comm 210 ............... Introduction to Interpersonal Communication ..........(3)
- Mgmt 300 ............... Principles of Management ........................................(3)

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 study and activities in basic drill, physical fitness, rappelling, leadership reaction course, first aid, and basic marksmanship. Learn fundamental concepts of leadership in both a classroom and outdoor laboratory environment. Participation in a weekend exercise is optional, but highly encouraged.

102. Military Science II. 2 credits. Learn and apply the principles of effective leadership. Reinforce self-confidence through participation in physically challenging exercise. Develop oral and written communication skills that will improve individual and group interaction. Develop skills in basic first aid, land navigation, and radio communications. Required leadership lab, MSci 102L. Participation in a weekend exercise is optional, but highly encouraged.

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; advanced first aid, land navigation, and basic military tactics. Learn fundamentals of ROTC’s Leadership Assessment Program. Leadership lab, MSci 201L, and a weekend exercise is optional, but highly encouraged.

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. Leadership lab, MSci 202L, and a weekend exercise is optional, but highly encouraged.

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

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 to lead small groups, receive personal assessments and encouragement, and lead again in situations of increasing complexity. Uses small unit defensive tactics and opportunities to plan and conduct training for lower division students both to develop such skills and as vehicles for practicing leading. 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

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 three one-hour sessions for physical fitness. Participation in one weekend exercise is required; two other weekend exercises optional. S

401. Military Science IV. 2 credits. Prerequisite: Military Science III. Instruction in the functions of a military staff, military writing and ethics. Course includes leadership laboratories and field exercise.

402. Military Science IV. 2 credits. Prerequisite: Military Science III in professionalism and military justice, logistics and personnel systems. Course includes leadership laboratories and field exercise.

495. Special Topics. 1-3 credits. Special Topics for the Department of Military Science. F,S

Music

(Mus)

E. J. Miller (Chair), Blake, Brock, Einarson, Fry, Koozin, Lewis, Norman, Rheude, Rodde, Sedgwick, Solose, and Towne

Music is offered at the University of North Dakota in the belief that it contributes to the aesthetic development of humankind. Fully accredited...
ed by the National Association of Schools of Music, the Department of Music through its curricula and performance opportunities serves a broad constituency of students in their preparatory, life-long, pre-professional, and inservice learning endeavors.

Music courses that are specifically designed for general education include: Music 100, 108, 109, 220, 226, 227. These courses, along with performing ensembles, can fulfill the Arts and Humanities portion of the University’s General Education Requirements. Individual lessons for credit are offered to music majors and minors, although talented non-majors may audition for lessons (Music 105) and are accepted in proportion to faculty loads.

Prior to admission to any of the music degree programs, students’ musical background and skills will be evaluated, and a meeting with the appropriate faculty member(s) will be scheduled. Prospective students are designed for students who wish to pursue any instrumental or vocal instrument in the area their major performing medium prior to acceptance for individual lessons. First-year students in a music major or minor should register initially for Music 100, 111, 113, and for individual lessons and the major ensemble within their area of concentration. Placement tests administered during the first week of classes will determine whether a student may be excused from Music 100, which does not count towards the major, but remedies any initial deficiencies revealed by the examination in the general knowledge of music literature. Music 111 and 113 are the normal beginnings of Music Theory and Aural skills, but deficiencies revealed by the examination may require remedial work fulfilled by Music 108. Upper-division courses are pursued in accordance with the specific degree program selected by the student.

The Bachelor of Music degree program offers majors in Performance and in Music Education. 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 accepted for this program must demonstrate exceptional potential for performance excellence. The Performance student is expected to pass a Qualifying 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/choral emphasis, culminating in the presentation of a half recital. The successful completion of this program will qualify the student for state certification in instrumental, choral, and general music, grades K-12.

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.

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 a large ensemble each semester of residence except for the semester of student teaching. Although the number of ensemble credits for each degree is listed below, specific guidelines for fulfilling the ensemble requirement for each of the degree programs can be found in the Department of Music Undergraduate Handbook, available in the Department Office.

Through the Center for Teaching and Learning students may pursue a Bachelor of Science degree in a combination of Elementary Music and Elementary Education. Although not accredited through NASM, students graduating from this program are certified to teach regular elementary school subjects in grades K-6 as well as general music for those grades.

Regardless of the degree program selected, all music majors are evaluated regularly through applied music jury examinations. In addition, each degree program has a specific piano study and piano proficiency requirement. Bachelor of Music students must complete all levels of the Piano Proficiency Sequence prior to graduation or prior to registration for student teaching in the case of music education students. Bachelor of Arts degree students must pass the first level Piano Proficiency. At the end of the fourth semester of music study, students are subject to a mid-program review and, prior to graduation, students must complete a portfolio review as part of the Department assessment procedure.

Individual Lessons and Ensembles may be repeated for credit without limitation. A maximum of 12 hours of credit in ensembles, however, may apply toward graduation.

A Department of Music Student Handbook is available to all 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 Fine Arts and Communication

**BACHELOR OF MUSIC WITH A MAJOR IN PERFORMANCE**

Required 132 hours:

I. General Education Requirements, see pages 27-30. .................(6)

II. College of Fine Arts Requirements, see page 49. ..................(6)

III. The Following Curriculum: .................................................(86)

- Mus 100: Introduction to the Understanding of Music ..............(3)
- (May be waived by examination)
- Core Courses:
  - Mus 111, 112, 211, 212: Theory I, II, III, IV ....................(12)
  - Mus 227: Poplar and Classical Musics of the World ..........(3)
  - Mus 330, 331, 332: Music History Survey I, II, III ..........(9)
  - Mus 340: Basic Conducting ...........................................(2)
- Performance Courses:
  - Major Instrument .........................................................(24)
  - Secondary Instrument ....................................................(24)
  - Ensembles, Large and Small ..........................................(12)
  - Mus 450: Applied Music Pedagogy ...................................(2)

**VOCAL MAJORS**

Other Supporting Courses:
- History and Literature .....................................................(6)
- Theory and Composition .....................................................(6)
- Music Electives (Other than performance) .......................(3)
- Foreign Language Requirement ...........................................(8)
- French 101, 102 or German 101, 102 or Italian 101, 102 .........(8)
- Electives .............................................................................(8)
- Electives in disciplines other than the major ..........................(4)

**INSTRUMENTAL MAJORS**

Other Supporting Courses:
- History and Literature .....................................................(3)
- Theory and Composition .....................................................(3)
- Music Electives (Other than performance) .......................(3)
- Music 423 (required for Keyboard Performance majors) .......(3)
- Electives .............................................................................(13)
- Electives in disciplines other than the major ..........................(13)

**BACHELOR OF MUSIC WITH A MAJOR IN MUSIC EDUCATION**

*(In Instrumental or Choral Emphasis)*

Required 132 hours:

I. General Education Requirements, see pages 27-30. .................(6)

II. College of Fine Arts Requirements, see page 49. ..................(6)

III. The Following Curriculum:
- Mus 100: Introduction to the Understanding of Music ..............(3)
- (May be waived by examination)
- Core Courses:
  - Mus 111, 112, 211, 212: Theory I, II, III, IV ....................(12)
  - Mus 227: Poplar and Classical Musics of the World ..........(3)

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**INSTRUCTIONAL MAJOR**

- History and Literature .....................................................(3)
- Theory and Composition .....................................................(3)
- Music Electives (Other than performance) .......................(3)
- Music 423 (required for Keyboard Performance majors) .......(3)
- Electives .............................................................................(13)
- Electives in disciplines other than the major ..........................(13)
MINOR IN MUSIC
Required 21 hours
Mus 100: Introduction to the Understanding of Music (May be by examination) ............................................ (3)
Core Courses
Mus 111, 112, 211, 212: Theory I, II, III, IV ................. (6)
Mus 113, 114: Ear Training and Sight Singing I, II ............ (2)
Mus 227: Popular and Classical Music ....................... (4)
Mus 330, 331, 332: Music History Survey I, II, III .......... (9)
Mus 340: Basic Conducting ...................................... (3)
Other Supportive Courses
Performance (one instrument or voice) ................. (4)
Electives in Theory/Comp. History/Lit. or Applied ....... (4)
Mus 494: Senior Project ........................................ (1)
Minors in other departments:
Foreign language: 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 Graduation and language requirements).

Courses
100. Introduction to the Understanding of Music, 3 credits. Music appreciation for students without an extensive background in music. Open to non-majors for humanities credit. F-S
106. Fundamentals of Music, 3 credits. The fundamental musical skills, from reading notes, through scales, chords, basic harmony, and musical terminology. No degree credit for music majors. Non-majors receive humanities GER credit. F-S
109. Creative Music, 3 credits. Understanding of musical elements and their organization through involvement with creative processes in music; individual and group experiments with sound utilizing a variety of sound sources including environmental sounds. Open to non-majors for humanities credit. F-S
201. Diction for Singers, 1 credit. Prerequisite: 2 semesters of private voice lessons. Rules for and practical applications of pronunciation of one of the major languages used in song literature: French, German, or Italian. May be repeated for credit up to 3 hours. F-S
301. Special Topics, 1 to 3 credits. Consent of instructor required. Specially arranged seminars or courses on variable topics not covered by regular departmental offerings. May be repeated for credit up to 6 hours. F-S
490. Individual Research in Band Literature and Method Books, 1 credit. For summer camps and workshops only. Independent study in some area of band literature and instrumental literature. On demand.
494. 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
498. 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
111, 112. Theory III, 6 credits. 111 is prerequisite for 112. Direct involvement with creative processes in music through individual and group experiments with sound. Music notation and terminology; rhythm, melodic, and harmonic patterns. F-S
113, 114. Ear Training and Sight Singing III, 2 credits. 113 is prerequisite for 114, and 113 is a corequisite for 114 and 112 is a corequisite for 114. Training in reading at sight and in aural recognition involving dictation, keyboard and singing skills. F-S
211. Theory III, 3 credits. Prerequisites: Music 112, 114. Compositions selected from various periods are used to gain experiences with rhythmic, melodic, harmonic, and contrapuntal aspects of music. Keyboard applications and original writing. F-S
212. Theory IV, 3 credits. Prerequisites: 211, 211. Continuation of Theory III with primary emphasis on 20th-Century musical thought and techniques. S
ties and interests of the students. S/2

ensemble, choir and children’s chorus. Specific areas of focus to be determined by abilities and interests of the students. S/2

Composition. 2 credits. Prerequisite: Music 212. Original composition in smaller forms for vocal and instrumental solos and ensembles. F,S

Music History and Literature

220. 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.

226. Rock Music and Popular Culture. 3 credits. Rock and other popular musics are examined in relation to historical and social world trends since the mid-twentieth century. The course focuses on how contemporary issues including civil rights, the peace movement, global political change, and new technology have paralleled developments in rock music. On demand.

227. Popular and Classical Musics of the World. 3 credits. A study of the music of selected cultures of the world and ethnic sub-cultures in America, including Native American, Jazz, Popular, and World music. F/2

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.

300. Music History Survey I. 1 credit. Prerequisite: Music 100 or instructor’s permission. A survey of western music history Ancient Times through the Middle Ages and Renaissance. S/2

311. Music History Survey II. 3 credits. Prerequisite: Music 100 or permission of the instructor. A survey of western music history of the Common Practice Period, including Baroque, Classical, and Early Romantic music. F/2

322. Music History Survey III. 3 credits. Prerequisite: Music 100 or permission of the instructor. A historical survey of western art music from late Romantic innovations to the present day. S/2

423. Piano Literature. 3 credits. Prerequisite: Music 395. Piano, or consent of the instructor. Study and analysis of keyboard music from the Baroque period to the present, with attention to the development of forms, techniques, and styles. S/2


427. Seminar in Music History. 3 credits. Prerequisite: 3 hours of music history and literature. On demand.

428. 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/2

429. 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/2

Music Education

131. Class Lessons. 1 credit. Beginning class instruction in any of the following instrumental classes: Brass, Woodwind, Percussion, and String Class; Piano Class; Voice Class; Guitar Class. May be repeated for credit without limitation. F,S

132. Class Lessons. 1 credit. Intermediate class instruction in any of the following instrumental classes: Brass, Woodwind, Percussion, and String Class; Piano Class; Voice Class; Guitar Class. May be repeated for credit without limitation. F,S


318. Introduction to MIDI Technology. 2 credits. Prerequisite: Music 212, 214. Introduction to the use of computers and digital synthesizers in composition, performance and music education. S

431. Stage Band Techniques. 2 credits. Prerequisite: Music 340. Organization of and materials appropriate for the stage band, methods of teaching the rhythmic and tonal problems inherent in its style. On demand.

432. Instrumental Methods. 3 credits. F/2

433. Orchestra Directors’ Course. 1 credit. Organizational and administrative problems of the orchestra director such as recruitment, scheduling, programming, promotion of the string program, and literature. On demand.

437. Music Education Special Topics. 1 to 3 credits. F,S

439. Choral Methods. 3 credits. F/2

Music Performance

a. Conducting

340. Basic Conducting. 2 credits. Prerequisite: Music 112. Development of basic conducting techniques, baton technique, and use of the left hand. Reading of choral and instrumental scores. F

341. Choral Conducting. 2 credits. Prerequisites: Music 340 and successfully passing the Piano Proficiency Test. Conducting problems and rehearsal techniques in relation to choral literature in various styles based on score, class performance, and recordings. S/2

342. Instrumental Conducting. 2 credits. Prerequisite: Music 340. Instrumental conducting, rehearsal techniques, and score reading through the use of instrumental literature of various styles and periods. S/2

b. Pedagogy

438. Music in the Junior High School. 1 to 4 credits. On demand.

450. Applied Music Pedagogy. 2 credits. Prerequisite: 5 semester hours of Applied Music in the instrument (or voice) concerned or consent of the instructor. Readings, instruction, and application of pedagogical principles and materials relevant to the student’s major instrument(s). May be repeated for credit up to 6 hours. Keyboard F/2, Voice F/2, Strings S/2

c. Music Ensembles

A maximum of twelve hours of credit in ensembles may apply towards graduation.

260. Concert Choir. 1 credit. F,S

261. University Chamber Chorale. 1 credit. F,S

263. Varsity Band. 1 credit. F,S

264. Women’s Chorus. 1 credit. F,S

269. Opera Project. 1 credit. Production and presentation of chamber operas, scenes from larger works, and major productions, fully staged and costumed. Permission of instructor. On demand.

270. Wind Ensemble. 1 credit. F,S

271. University Band. 1 credit. F,S

272. Marching Band. 1 credit. F,S

273. Instrumental Jazz Ensemble. 1 credit. F,S

274. Symphony Orchestra. 1 credit. F,S

275. University Chamber Orchestra. 1 credit. On demand.

276. Collegium Musicum. 1 to 4 credits. On demand.

279. Chamber Music Groups. 1 credit. Any combination of strings, brass, woodwind, voices, percussion, or keyboard instruments on an ad hoc basis by a faculty member to utilize the particular talents of advanced students in exploring and performing chamber music literature. These groups will prepare compositions in such media as string quartets and trios, windwood quartets, and vocal quartets. F,S

d. Applied Music (Individual Lessons)*

105. Individual Lessons for Non-Majors. 1 credit. F,S

195. Individual lessons. 1 credit. F,S

196. Individual lessons. 2 credits. For Bachelor of Music in Performance students only. F,S

295. Individual Lessons. 1 credit. F,S

296. Individual Lessons. 2 credits. For Bachelor of Music in Performance students only. F,S

395. Individual lessons. 1 credit. F,S

396. Individual lessons. 4 credits. For Bachelor of Music in Performance students only. F,S

495. Individual Lessons. 1 credit. F,S

496. Individual lessons. 4 credits. For Bachelor of Music in Performance students only. F,S

497. Recital. 1 credit. Prerequisite: Music 395. Co-requisite: Music 495. The presentation of a half-recital. S-U grading only. F,S

*In registering for private lessons in voice, piano, organ, or any band or orchestra instrument, "Voice" or the name of the instrument serves as the title of the course. An audit with appropriate Music Faculty is a prerequisite for all students’ enrollment in Individual Lessons. For the final examination, the student will perform before a faculty committee (jury). No regular student may take an Applied Music course without credit or on other than a letter grade basis.
Nursing
(Nurs)

E. Nichols (Dean), Anderson, Benson, Berg, Bjerve, Blais, Burd, Christian, Downey, Gilje, Hanson, Helgeson, Henly, Heuer, Hunter, Hurley, Imler, Iszler, Klose, Kuntz, Langemo, Lindseth, Macejkovicj, Mallow, Melland, Milburn, Monnig, O’Connor, Olson, Radel, Schauer, Szegel, B. Thompson, M. Thompson, Tyree, Volden, Wiltine, and Youngs

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 National League for Nursing and are approved by the North Dakota State Board of Nursing.

B.S. IN NURSING

Required 129 hours, including:

I. General Education Requirements (Including 9 credits of Arts and Humanities and approximately six credits of other electives. It is recommended that students try to complete a portion of these prior to admission to nursing), see pages 27-30.

II. College of Nursing Degree Requirements, see page 54.

III. The Following Curriculum:

**Freshman Year (Prenursing)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Engl 101</td>
<td>Composition I</td>
<td>(3)</td>
</tr>
<tr>
<td>*Chem 104 or 105</td>
<td>General Chemistry</td>
<td>(4)</td>
</tr>
<tr>
<td>*Chem 107</td>
<td>Introduction to Organic Chemistry</td>
<td>(4)</td>
</tr>
<tr>
<td>(or Chem 106 w/ Bio 101 and 102)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Psy 101</td>
<td>Introduction to Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>*Anat 204</td>
<td>Anatomy for Paramedical Personnel</td>
<td>(3)</td>
</tr>
<tr>
<td>*Anat 204L</td>
<td>Anatomy Laboratory</td>
<td>(2)</td>
</tr>
<tr>
<td>*Soc 101</td>
<td>Introduction to Sociology</td>
<td>(3)</td>
</tr>
<tr>
<td>or</td>
<td>Soc 102</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td>Anth 171</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 102</td>
<td>Composition II</td>
<td>(3)</td>
</tr>
<tr>
<td>Engl 209</td>
<td>Technical and Business Writing</td>
<td>(3)</td>
</tr>
<tr>
<td>or</td>
<td>Comm 161</td>
<td>(3)</td>
</tr>
<tr>
<td>or</td>
<td>Fundamentals of Public Speaking</td>
<td>(3)</td>
</tr>
</tbody>
</table>

or Language course ................................................. (4)

**Sophomore Year**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Phys 301</td>
<td>Mechanics of Human Physiology</td>
<td>(4)</td>
</tr>
<tr>
<td><strong>MBio 202/202L</strong></td>
<td>Introduction to Medical Microbiology/Lab</td>
<td>(5)</td>
</tr>
<tr>
<td>Nurs 233</td>
<td>Nursing and Professionalism</td>
<td>(1)</td>
</tr>
<tr>
<td>Nurs 280</td>
<td>Introduction to Clinical Nursing</td>
<td>(3)</td>
</tr>
<tr>
<td>Nurs 286</td>
<td>Health Assessment Techniques</td>
<td>(3)</td>
</tr>
<tr>
<td>PhTx 304</td>
<td>Human Pharmacology</td>
<td>(3)</td>
</tr>
<tr>
<td>Psy 251</td>
<td>Developmental Psychology</td>
<td>(4)</td>
</tr>
<tr>
<td>N&amp;D 240</td>
<td>Fundamentals of Nutrition</td>
<td>(3)</td>
</tr>
<tr>
<td>Nurs 230</td>
<td>Personal and Group Dynamics</td>
<td>(2)</td>
</tr>
<tr>
<td>Nurs 288</td>
<td>Introduction to Adult Health Nursing</td>
<td>(4)</td>
</tr>
</tbody>
</table>

**Electives/Arts & Humanities**

**Junior Year**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psy 370</td>
<td>Abnormal Psychology</td>
<td>(3)</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</td>
<td>(4)</td>
</tr>
<tr>
<td>Nurs 320</td>
<td>Therapeutic Nutrition in Nursing</td>
<td>(1)</td>
</tr>
</tbody>
</table>

**Senior Year**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs 383</td>
<td>Childbearing Nursing I</td>
<td>(2)</td>
</tr>
<tr>
<td>Nurs 384</td>
<td>Child Health Nursing I</td>
<td>(2)</td>
</tr>
<tr>
<td>Nurs 385</td>
<td>Childbearing Nursing II</td>
<td>(2)</td>
</tr>
<tr>
<td>Nurs 386</td>
<td>Child Health Nursing II</td>
<td>(2)</td>
</tr>
<tr>
<td>Nurs 387</td>
<td>Family in the Community</td>
<td>(3)</td>
</tr>
<tr>
<td>Soc 326</td>
<td>Statistics</td>
<td>(3)</td>
</tr>
<tr>
<td>or Psy 241</td>
<td>Introduction to Statistics</td>
<td>(4)</td>
</tr>
<tr>
<td>or Econ 210</td>
<td>Intro. to Business &amp; Econ</td>
<td>(3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs 350</td>
<td>Nursing Research</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Electives/Arts & Humanities**

**First Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</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>Nurs 481</td>
<td>Multisystem Complex Adult Health</td>
<td>(4)</td>
</tr>
<tr>
<td>Nurs 498</td>
<td>Nursing Practicum Theory</td>
<td>(2)</td>
</tr>
<tr>
<td>Nurs 488</td>
<td>Nursing Practicum</td>
<td>(1-4)</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</td>
<td>(4)</td>
</tr>
<tr>
<td>or</td>
<td>Students are encouraged to complete</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td>Electives required by graduation</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td>to reach 129 total credits (usually 6 credits).</td>
<td></td>
</tr>
</tbody>
</table>

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 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. 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. Open to non-majors.

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.

280. Introduction to Clinical Nursing, 3 credits. Pre- or Co-requisites: Nurs 286, 233, Psy 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.

286. Health Assessment Techniques, 3 credits. Pre- or Co-requisites: Psy 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.


320. Therapeutic Nutrition in Nursing, 1 credit. Prerequisites: N&D 240 and Nurs 280. Focus is 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.

328. Adult Health Nursing, 4 credits. Prerequisites: Nurs 230, 288, PhTx 304, MBio 202, 202L, Psy 251. Corequisite: Nurs 320. Focus is on selected theories and principles of adult nursing practice, education, and research with particular emphasis on the acute biological aspects. Lecture/discussion/special assignment. F,S.

337. Nursing Cooperative Education Work Experience in Nursing, 1-2 credits per semester. Prerequisites: Completion of all sophomore year courses and a 2.5 overall GPA. A reality experience in nursing integrating clinical work experience and evaluation. Designed to enhance the student’s prior course work 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 10 hours per credit. S/U grading only. F,S.

350. Nursing Research, 3 credits. Pre- or Co-requisite: Statistics. Introduction to nursing research with a focus on the interrelationship among nursing practice, theory and research. Lecture/Discussion. F,S.

361. New Concepts in Nursing Practice I, 2 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.
Nutrition and Dietetics (N&D)

J. Hall (Chair), Goodwin, and Rude

The mission of the Department of Nutrition and Dietetics is to offer theoretical and experiential preparation for professionals. The professional programs offered include:

B.S. in Dietetics:
B.S. in Community Nutrition.

The Coordinated Program in Dietetics combines academic preparation with clinical experiences for students who wish to become Registered Dietitians (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 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 2.60 and a minimum of “C” grade in all science, foods, and nutrition courses are required. The Coordinated Program in Dietetics is fully accredited by the Commission on Accreditation/Approval of The American Dietetic Association, a specialized accrediting body recognized by the Commission on Recognition of Postsecondary Accreditation and the United States Department of Education.

The major in Community Nutrition is designed to allow 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. Graduates completing Option A are eligible to become Licensed Nutritionists (L.D.) in the state of North Dakota.

College of Nursing

B.S. IN COMMUNITY NUTRITION

Required 125 hours, including:
I. General Education Requirements, see pages 27-30.
II. College of Nursing Requirements, see page 54.
III. Prerequisite Courses:

Either:

Chem 104.........Introductory Chemistry.....(4)
Chem 107.........Introduction to Organic and Biochemistry......(4)

or:

Chem 105, 106.....General Chemistry I, II...........................(8)
Chem 212............Organic Chemistry..........................(5)
BioCh 301..........Biochemistry........................................(3)
BioL 101/101L.....Introduction to Biology..................(4)

Anat 204/204L.......Anatomy for Paramedical Personnel............(5)
Phy 301..........Mechanics of Human Physiology..............(4)

Phy 101..........Introduction to Psychology........................(3)

Anth 171.........Introduction to Cultural Anthropology............(3)

or

Soc 101.............Introduction to Sociology.........................(3)

Math 103............College Algebra..................................(3)

Acct 295.........Survey of Accounting Principles............(3)

or

Accr 209..........Elements of Accounting..................(3)
Soc 326..........Sociological Statistics........................(3)

or

Psy 241..........Introduction to Statistics........................(4)

Comm 161..........Fundamentals of Public Speaking.............(3)

N&D 100.........Introduction to Nutrition and Dietetics...........(1)

T&L 252..........Child Development....................................(3)

or

Pys 251...........Developmental Psychology........................(4)
Nurs 230..........Personal and Group Dynamics...................(2)
IV. Required Courses:

Comm 210 ................. Introduction to Interpersonal Communication ..........(3)
Comm 366 ................. Business and Professional Speaking .............. (3)
N&D 240 ................. Fundamentals of Nutrition ...................... (3)
N&D 335 ................. World Food Patterns .................................(3)
N&D 341 ................. Maternal and Child Nutrition ...................... (2)
N&D 342 ................. Community Nutrition ............................ (3)
N&D 345 ................. Nutrition in the Aging Process ...................... (2)
N&D 498 ................. Research in Nutrition and Dietetics ................. (1)

V. Choice of either Option A or Option B.

Option A:

N&D 231 ................. Food Management ...................................... (3)
N&D 332 ................. Fundamentals of Food Science ..................... (3)
N&D 340 ................. Food Service Management ......................... (3)
N&D 441 ................. Advanced Nutrition ................................(4)
N&D 498 ................. Research in Nutrition and Dietetics ................. (2)

Option B:

Soc 335 ................. The Family ...................................................... (3)
HIPER 327 ................. Fitness for Life ...........................................(4)
or
N&D 348 ................. Sports Nutrition ........................................... (3)
Soc 355 ................. Drugs and Society ......................................... (3)
or
PSY 402 ................. Principles of Pharmacology and Toxicology .......(2)
Soc 352 ................. Aging ................................................................. (3)

VI. Electives or minor

In consultation with advisor, the student will select a minor or electives to meet the University minimum of 125 semester hours of credit for graduation.

B.S. IN DIETETICS

Required 125 hours, including:

I. General Education Requirements. see pages 27-30.

II. College of Nursing Requirements. see page 54.

III. The Following Curriculum:

Pre-professional Requirements:

Acct 200 ................... Elements of Accounting ..............................(3)
Biol 101 ................... Introduction to Biology ................................. (4)
or
Anat 204 and 204L ........ Anatomy for Paramedical Personnel .......... (5)
Chem 105, 106 .......... General Chemistry I, II ..................................(8)
Chem 212 ................. Organic Chemistry .......................................(5)
T&L 252 ................. Child Development ....................................... (3)
Math 103 ................. College Algebra ............................................(3)
MBio 202 ................. Introductory Medical Microbiology .......... (4)
or
MBio 302 ................. General Microbiology ................................. (3)
N&D 100 ................. Introduction to Nutrition and Dietetics ............ (1)
N&D 231 ................. Food Management ...................................... (3)
N&D 240 ................. Fundamentals of Nutrition ......................... (3)
N&D 332 ................. Fundamentals of Food Science .....................(3)
N&D 335 ................. World Food Patterns .................................(3)
Phy 301 ................. Mechanics of Human Physiology ...................(4)
Psy 101 ................. Introduction to Psychology ............................. (3)
Psy 241 ................... Introduction to Statistics ............................... (4)
Soc 101 ................... Introduction to Sociology .................................(3)
or
Anth 171 ................. Introduction to Cultural Anthropology .......... (3)

Professional Dietetics Requirements:

Bio 301 ................... Biochemistry .............................................. (3)
Mgmt 305 ................. Managerial Concepts ................................(3)
N&D 325 ................. Orientation to Dietetics ................................(1)
N&D 340 ................. Food Service Management ......................... (3)
N&D 341 ................. Maternal and Child Nutrition ...................... (2)
N&D 342 ................. Community Nutrition ....................................(3)
N&D 345 ................. Nutrition in the Aging Process ...................... (2)
N&D 400 ................. Advanced Nutrition .....................................(4)
N&D 486 ................. Medical Dietetics ........................................... (4)
N&D 486 ................. Clinical/Community Experiences I, II, III, IV ...... (24)
N&D 498 ................. Research in Nutrition and Dietetics ................. (3)

Minor in Nutrition

Required: completion of 20 hours of nutrition-related courses.

In consultation with an advisor in the Department of Nutrition and Dietetics, select a minimum of 20 semester hours of credit in nutrition-related courses.
Occupational Therapy

S. McIntyre (Chair), Byram, Fox, Stube, and Zimmerman

The Occupational Therapy program is accredited by the Accreditation Council for Occupational Therapy Education. For information regarding accreditation, contact the ACOTE at (301) 652-2682. All basic professional programs must comply with the Essentials of an Accredited Educational Program for the Occupational Therapist, 1991. Graduates of the program will be able to sit for the national certification examination for the occupational therapist administered by the National Board for Certification in Occupational Therapy, Inc. After successful completion of this exam, the individual 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 NBOT Certification Exam.

The following four and one-half year program will lead to a Bachelor of Science in Occupational Therapy. The student spends the first two years as a pre-major in the College of Medicine and Health Sciences to complete the pre-professional program. In the spring of the Sophomore year, when the student is completing the required courses as listed in the first two years, he/she must make written application for admission to the professional Occupational Therapy program. The CLEP in Natural Sciences will not meet Biology and Chemistry requirements in Occupational Therapy. Students should carefully check all CLEP exams for potential acceptance at UND. Acceptance is on a competitive basis with consideration given to pre-professional performance in the sciences, general graduation requirements, leadership potential, volunteer work and personal qualifications. A student must have at least a C in each of the Sciences, English Composition, and all Occupational Therapy courses. A student cannot repeat or withdraw from a course more than one time per course to remain eligible for admission to the professional program. A minimum grade point average of 2.7 is required for admission to the professional program, to remain in the professional program and to be eligible for Level II fieldwork placement and graduation. A student must satisfactorily complete all courses each semester to be eligible to enroll for the next semester. The Occupational Therapy Department reserves the right to place on professional probation or cancel the registration of any student in Occupational Therapy whose performance in relation to patient treatment is unsatisfactory.

Program accommodations for qualified handicapped persons will be reviewed upon notification to the department of a prospective student’s needs and limitations. A satellite professional level occupational therapy program is available for Wisconsin residents 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, phone 307-268-2541. Wyoming residents may call 1-888-699-0006.

School of Medicine and Health Sciences

B.S. IN OCCUPATIONAL THERAPY

Required 132 hours including:

I. General Education Requirements, see pages 27-30.
II. School of Medicine and Health Sciences, see page 52.
III. The Following Curriculum:

Pre-Professional Requirements

Engl 101, 102 or 209 Composition I, II or Tech. & Bus. Writing (6)
Comm 161. Arts and Humanities (9)
Biol 101. Introduction to Biology (4)
Chem 104 or 105 Introductory Chemistry or General Chemistry I (4)
Soc 101. Introduction to Sociology (3)
Psy 101. Introduction to Psychology (3)
Psy 241. Introductory to Statistics (4)
Psy 251. Developmental Psychology (4)
Psy 370. Abnormal Psychology (3)
Anat 204. Anatomy for Paramedical Personnel (3)
Phys 301. Mechanics of Human Physiology (4)

Courses

200. Introduction to Occupational Therapy. 2 credits. Prerequisites: Anatomy 204, Psychology 251, and Department Major. History, scope, objectives, and functions of Occupational Therapy. F,S

205. Medical Terminology. 1 credit. Knowledge of medical terminology. F,S

303. Occupational Therapy with Infants & Pre-School Children. 4 credits. Prerequisite: Registered in the professional Occupational Therapy program. Normal and abnormal human development, conception through pre-school years. Emphasis on reflexes, sensory systems, sensory integration, illness and trauma, assessment procedures, treatment techniques and therapeutic media. Laboratory included: S

304. Psychosocial Aspects of OT with Children, Adolescents & Young Adults. 4 credits. Prerequisites: Registered in professional Occupational Therapy program, OT 303, 305, 322, Psychosocial dysfunction in children, adolescents, and young adults, with emphasis on OT evaluation, planning, and treatment. Laboratory included: S

305. Group Experience. 1 credit. Prerequisite: Registered in professional Occupational Therapy program. Promote verbal and nonverbal communication. Laboratory included: S. U grading only. F

307. Occupational Therapy with School Children & Young Adults. 4 credits. Prerequisites: Registered in professional Occupational Therapy program, OT 303, 305, 309, 322. Psychosocial dysfunction in children, adolescents, and young adults, with emphasis on OT evaluation, planning, and treatment. Laboratory included: S

308. Leadership Skills in Occupational Therapy. 1 credit. Prerequisites: Registered in professional Occupational Therapy program, OT 303, 305, 309, 322. Experiential learning in a group setting. This provides OT students with the opportunity to function as facilitators for their role in therapeutic groups in psychiatric settings. Laboratory included: S

309, 310. Medical Sciences I, Medical Sciences II. 2 credits, 3 credits. Prerequisite: Registered in professional Occupational Therapy program. The effect upon the human being of interruptions in, aberrations of, and trauma to the developing human organism throughout the life-span. 309-F, 310-S

312. Muscle Function in Health and Disease. 4 credits. Prerequisite: Registered in professional Occupational Therapy program. OT 322. Review of musculoskeletal system. Laboratory included: S

315. Orientation to Occupational Therapy Theory. 1 credit. Prerequisite: Registered in professional Occupational Therapy Program. Concepts: OT 303, 305, 309, and 309. Orientation to philosophical origins and theoretical framework of theories used in occupational therapy practice. F

322. Anatomy of Adults. 5 credits. Prerequisite: Registered in professional Occupational Therapy program. Detailed lectures and demonstrations on anatomy and anatomy of the extremities. Laboratory included: F

337. Cooperative Education in Occupational Therapy. 1-6 credits, repeatable to a total of 12 credits. Prerequisites: OT 200 and 205; overall GPA of at least 2.5. Completion of university credits, and approval of the Director of OT Cooperative Education Program. S/U grading only. F,S,S.
### Peace Studies (PS)

The Peace Studies courses listed below may be taken either as elective courses or as part of a program in interdisciplinary studies. For information on these interdisciplinary studies majors, see page 112 and consult the College of Arts and Sciences Office.

The Peace Studies courses are taught by faculty from the departments and colleges of law, medicine, philosophy and religion, history, education, economics, English, geography, psychology, sociology, languages, nursing, and the natural and physical sciences. Their goal is to encourage critical scholarly thinking and action by students and faculty on the relatively unexamined 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, and theological fields.

#### Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>201</td>
<td>Moral Thought in the Nuclear Age</td>
<td>3</td>
<td>Registered in the professional Occupational Therapy program</td>
<td>A course in decision making in a nuclear age. The course seeks to discover a modern sense of moral duty that acknowledges the realities of the nuclear age and asking what now we ought to do about them.</td>
</tr>
<tr>
<td>350</td>
<td>Peace Studies Seminar: Interdisciplinary Perspectives</td>
<td>3</td>
<td>Repeatable. Interdisciplinary seminar taught by two or more faculty members from different disciplines.</td>
<td>Topics are variable. Emphasis will be variable. Issues covered include the ways that conflicts can be managed.</td>
</tr>
<tr>
<td>360</td>
<td>Conflict Management</td>
<td>3</td>
<td>Registered in the professional Occupational Therapy program</td>
<td>A survey of the nature, causes, and dynamics of conflict and of the ways that conflicts can be managed.</td>
</tr>
<tr>
<td>370</td>
<td>Nuclear Weapons</td>
<td>3</td>
<td></td>
<td>A study of the history and development of nuclear weapons, their physical characteristics, and the related political and strategic planning which supports them.</td>
</tr>
<tr>
<td>379</td>
<td>Independent Study</td>
<td>1-4</td>
<td>Registered in the professional Occupational Therapy program</td>
<td>Consent of instructor. Supervised reading, study or research on an individual topic. On demand.</td>
</tr>
<tr>
<td>380</td>
<td>Internship</td>
<td>6-16</td>
<td></td>
<td>Provided direct experience in a peace-related, social change, arms control, or international agency.</td>
</tr>
<tr>
<td>390</td>
<td>Senior Seminar</td>
<td>1-4</td>
<td></td>
<td>On demand.</td>
</tr>
</tbody>
</table>

#### Pharmacology and Toxicology (PhTx)

**D. Hein (Chair), Blake, Borg, Buckley, Clarens, Epstein, Hulla, Jahn, and Martsof**

The Department of Pharmacology and Toxicology offers an undergraduate minor in pharmacology and toxicology. The objective of the program is to provide an opportunity for undergraduate students to receive a general understanding of this discipline. Pharmacology and Toxicology is a health and life science discipline of relevance to many students. Educational objectives of departmental programs include an appreciation for the biological consequences of a chemical environment, including the actions of prescribed drugs, self-medication (over-the-counter) drugs, and psychoactive drugs frequently abused by the general public. It also includes the biological effects of food additives, agricultural, environmental, and industrial chemicals.
Students gain a scientific basis for environmental issues and risk-benefit decisions. Departmental courses provide students with a general understanding of how drugs work, how they are developed and approved, and the differences between generic and brand name drugs. Students learn how to be better informed and educated health care consumers.

Science students majoring in chemistry and biology who complete the minor will appreciate increased relevance for their disciplines and will have an opportunity to enhance their application for further graduate or professional education in the health sciences. Students with majors in education, social work, counseling, sociology, and other disciplines can enhance their abilities to interact with people who may have drug-related problems. Students with interests in engineering, business, agriculture, environmental law, and occupational safety and environmental health will have an increased understanding of the effects of occupational chemicals on the environment and the worker.

Individual pharmacology and toxicology courses are required for various other health science programs such as Nursing (both graduate and undergraduate), Occupational Safety and Environmental Health, and Athletic Training. Individual courses are also required for the Chemical Use/Abuse Awareness minor in Social Work.

The Department offers a number of graduate and professional courses in Pharmacology and Toxicology. Details of these courses can be found in the Graduate School section of this catalog and the School of Medicine and Health Sciences catalog.

MINOR IN PHARMACOLOGY AND TOXICOLOGY

Required 20 hours, including:

- BCh 303 Biochemistry Lecture (3)
- Phy 301 Mechanics of Human Physiology (4)
- PhTx 304 Human Pharmacology (3)
- PhTx 402 Principles of Pharmacology and Toxicology (2)
- PhTx 410 Drugs Subject to Abuse (2)
- PhTx 490 Readings in Pharmacology and Toxicology (1-4) or
- PhTx 493 Research in Pharmacology and Toxicology (1-4)

The following electives can also be credited towards the minor:

- PhTx 490 Readings in Pharmacology and Toxicology (1-4)
- Anat 204 Anatomy for Paramedical Personnel (3)
- Chem 209 Quantitative Analysis (4)
- MBio 302 General Microbiology Lecture (4)

Courses

304. Human Pharmacology, 3 credits. Prerequisites: Physiology 301 and Chem 107 or equivalent. A survey of the more important drugs used in medicine, including basic principles, clinical uses and possible adverse effects.

402. Principles of Pharmacology and Toxicology, 2 credits. An introductory pharmacology and toxicology course with an emphasis on basic principles. Drugs will include those most frequently encountered by the general public. The course does not require a science prerequisite and is appropriate for students in social work, athletic training, sociology, education, counseling, etc. who will encounter drug-related problems.

410. Drugs Subject to Abuse, 2 credits. Biochemical, pharmacological, behavioral and therapeutic aspects of substance abuse. Prerequisite: Advanced undergraduate standing.

490. Readings in Pharmacology and Toxicology, 1-4 credits. Prerequisites: Advanced undergraduate standing and consent of instructor. Topics and credits to be arranged with the instructor. On demand.

493. Research in Pharmacology and Toxicology, 1-4 credits, repeatable to 4 credits. The conduct of laboratory research under faculty supervision. Advanced undergraduate standing and consent of instructor required. F.A.S.S.

Philosophy and Religion

(Phil and Rel)

L. Lindholm (Chair), Lowe, Moore, Poochigian, and Sanborn

The two disciplines of Philosophy and Religion represent human-kind’s abiding interest in the fundamental questions of life, truth, and value. Questions about the meaning of life, the significance of truth, 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 course work 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:

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 hours, including:

I. General Education Requirements, see page 27-30.

II. Philosophy Concentration requirements.

33 major hours, including:

- Phil 101 Introduction to Philosophy (3)
- Phil 150 Introduction to Logic Scientific Method (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 includes, but is not limited to, the following: (for other possibilities, check with advisors in the department).

- A&K 225 Introduction to the Study of Women (3)
- A&K 250 African American Religious History (3)
- CTL 430 Multicultural Education (3)
- Engt 365 Black American Writers (3)
- Geog 151 Cultural Geography (3)
- Hist 345 The Ancient Near East (3)
- IS 352 Native American Philosophic Thought (3)
MINOR IN PHILOSOPHY AND RELIGION: PHILOSOPHY CONCENTRATION

Required 21 hours in Philosophy:

6 hours from:

- Phil 283: Oriental Philosophy ........................................ (3)
- Phil 300: Classical Greek and Hellenistic Philosophy .......... (3)
- Phil 301: Medieval Philosophy ........................................ (3)
- Phil 302: Renaissance and Enlightenment ......................... (3)
- Phil 303: Philosophy Since the Enlightenment ................... (3)

The additional 15 hours should normally include work complementary to the student’s major or to some developed personal interest. Students may consult department advisors 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 hours, including:

I. General Education Requirements, see pages 27-30.

II. Religion Concentration Requirements:

30 hours, including:

- Rel 101: Introduction to Religion (West) .......................... (3)
- Rel 300: Classical Greek and Hellenistic Philosophy .......... (3)
- 3 hours from
- Rel 102: Introduction to Religion (East) ........................... (3)
- Rel 109: Introduction to the Old Testament ...................... (3)
- Rel 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 advisors in the department).

- A/S 225: Introduction to the Study of Women ........................ (3)
- A/S 250: African American Religious History ................. (3)
- CTL 430C: Human Relations: Multicultural Education ...... (3)
- Engl 365: Black American Writers .................................. (3)
- Geog 151: Cultural Geography ....................................... (3)
- Hist 345: The Ancient Near East ................................... (3)
- IS 352: Native American Philosophic Thought ................ (3)
- Phil 283: Oriental Philosophy ....................................... (3)
- Rel 203: World Religions ............................................ (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 hours in Religion, including:

- Rel 109: Introduction to the Old Testament ...................... (3)
- Rel 203: World Religion .............................................. (3)

Rel 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. ethical 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 since 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

210. 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. Logic and Critical Thinking: Their Uses and Limits. 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. Oriental 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 Ockham. S/2

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/2

304. Twentieth Century Philosophy. 3 credits. Contemporary developments in Philosophy since the beginning of the 20th century. S/2

309. American Philosophy. 3 credits. A survey of major figures and movements in American philosophy. F/S

310. Ethics: Right and Wrong? Good and Evil? 3 credits. A study of traditional problems in ethical theory including the foundations of ethical philosophy, the nature of the good, ethical relativity, free will versus determinism. Although case studies and contemporary examples will appear in discussions, the central focus of the course will be historical and theoretical. F/S

320. Metaphysics: What is Real? 3 credits. A study of the basic categories by which things are understood. Topics include such issues as appearance and reality, substance, particular and general, space and time, and personal identity. F/S

330. Epistemology: What Can We Know and How Do We Know It? 3 credits. Inquiry into the nature and limits of knowledge as distinguished from belief; types of knowledge; the role of reason and sense experience in empirical knowledge. S/3

350. Symbolic Logic. 3 credits. The modern deductive logic of propositions and functions (including relations); logical systems. Students majoring in mathematics or computer science will be especially welcome in this course. S/2

356. Aesthetics: What is Beauty? 3 credits. Theoretical aesthetic experience and value; art and the creative process; the philosophical basis of criticism; art and society. Students of any major who are interested in the fine arts and their literature are encouraged to take this course. S/3

370. Ethics in Engineering and Science. 3 credits. Prerequisite: Junior/Senior standing. This course centers on the ethical issues of particular concern to both citizens and professionals involved in engineering and related technical/scientific fields. We review ethical history and ethical theory in all class discussions. The major focus of the course, however, is on ethical dilemmas of case studies, and codes relevant to contemporary engineering and scientific practice. Issues surveyed include: ethical responsibility of theorists and of applied scientists, risk and negligence in technological enterprises, the limits of knowledge/safety/quality, an update of the two cultures debate. F/S
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 as creative, living systems of beliefs and practices that enable men and women around the globe to make sense of their lives. 

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 post-graduate studies in law, medicine, and the ministry.

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. F

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. S


109. Introduction to the 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, literary forms and archaeological evidence. F

134. Ethics in Health Care. 3 credits. Some ethical problems and ethical guidelines are of particular concern to citizens and to professionals interested in health care fields. Examples are informed consent, abortion, euthanasia, organ transplant policies, professional standards versus patient rights, assisted suicide, ethics of testing/screening, health care policy and reform. Class members will explore such issues through case studies in a context of relevant ethical history and theory. Junior/senior standing encouraged. No prerequisites. S

372. Ethics in Business and Public Administration. 3 credits. Extremely important ethical controversies surround two of the central features of modern civilization: business and public administration. We will investigate the basic values promoted or inhibited by people and institutions in these areas. We will also use case studies, within a context of ethical theory and history, to explore more defined problems such as unsafe products, employee rights, the relation between business life and personal life, and many others. May be repeated for a maximum of 6 credits. On demand.

395. Philosophic Themes. 1-3 credits. This course provides an opportunity for detailed examination of important philosophic themes. Topics will vary depending on the faculty and student interests. Investigations into philosophy of religion, foundations of logic, African American philosophic schools, political correctness, and many others are possible. May be repeated for a maximum of 6 credits. On demand.

408. Philosophy of Human Nature. 3 credits. A consideration of philosophic problems arising from the methodology of the behavioral sciences. Students majoring in Political Science, Economics, Psychology, Anthropology or Sociology are especially welcome. S/2

412. Philosophy of Law. 3 credits. An investigation of the nature of both law and legal reasoning. Study of the nature of law focuses on theories of natural law, legal positivism, and legal realism. Legal reasoning concerns justificiation interpretation of precedent and statute within the common law tradition. Additional topics dealt with as time allows encompass such issues as the justification of punishment and enforcement of morality. F

430. Philosophy of Science and Technology. 3 credits. A study of the philosophic aspects of science and technology. Problems include, what makes a theory scientific?, is there a scientific “method?”; can one believe in science and religion at the same time?, how can we tell whether a technological enterprise is a reasonable risk or a negligent gamble?, how should a technological advance be controlled. S/3

472. Seminar in Philosophy. 3-6 credits. Prerequisites: Junior or senior standing and consent of the instructor. A consideration of selected philosophic problems or classic texts of mutual interest to departmental faculty and more advanced students. Previous work in philosophy or related disciplines is recommended. On demand.

492. Independent Study in Philosophy. 1-3 credits. May be repeated to 6 credits. Prerequisite: consent of instructor. Supervised tutorial on an individual basis. Typically, a student will work independently to a considerable extent. In other cases, the course may take the form of regularly scheduled meetings. F/S

Courses in Religion

Women and Religion, 3 credits. An examination of the role women have played in religious thought throughout history: as goddesses and mythic figures, as religious leaders, and as spiritual guides. S


World Religions, 3 credits. A general survey of major world religions including Hinduism, Buddhism, Confucianism, Taoism, Islam, Judaism and Christianity. Stress on the major tenets of these religions. S

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 in the 4th to 8th centuries; and concluding with the church in the Middle Ages. F

Christianity in the Modern World, 3 credits. A survey of Christianity from the Protestant Reformation to Vatican II, with an emphasis on the influence of Protestantism, responses to the Enlightenment in Christian theology, and twentieth-century challenges. S

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 F/S

East and West in Religions, 3 credits. A critical and comparative study of people’s religious orientation between Eastern and Western traditions. F

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. F

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. S

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. F

Atheism, Theism, and Secularism, 3 credits. Exploration of the basic theistic and atheistic 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.

Religion and Philosophy in China and Tibet, 3 credits. A survey of the major religions and philosophical systems of China and Tibet, from the bronze age through the Marxist-Leninist-Mao Zedong thought of the People’s Republic of China, S

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. F/S

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. On demand.

Death and Dying, 2 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. F

Buddhism, 3 credits. A historical and critical survey of various Buddhist schools in India, China, Tibet, and Japan. S/3

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 Writers, F/S

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. S/3

Psychology of Religion, 3 credits. The psychological significance of various types of religious experience, personal and social. An examination of classical psychological statements about religion including James, Allport, Kierkegaard, Freud, and Jung. S/2

Seminar in Religion, 3 credits. Prerequisites: Junior or Senior standing and some upper level work in Religion or consent of the instructor. A consideration of selected topics or religious classics of mutual interest to departmental staff and advanced students in Religion. On demand.

Independent Studies in Religion, 1-3 credits. Prerequisite: consent of the instructor. Supervised reading and study on an individual basis. F/S
Physical Therapy

(PT)

T. Mohr (Chair), Frappier, Green, Jeno, Johnson, LaBrecque, Mahey, P. Mohr, Relling, Romanick, and Teetzen

The Department of Physical Therapy offers the clinically oriented, rural emphasis, entry level Master of Physical Therapy (M.P.T.). The professional educational component of the M.P.T. requires three academic years and one summer session beyond the pre-physical therapy preparation.

Physical Therapy is an allied health profession open to both men and women. Physical therapists are involved in the evaluation and treatment of many types of disabilities. They are employed by hospitals, rehabilitation centers, nursing homes, school systems, community health agencies, and in private practice.

The first two years of the following curriculum are considered to be pre-Physical Therapy. The professional educational component of the M.P.T. will require three academic years and one summer session following completion of the 62-67 credits pre-physical therapy entrance requirements. The curriculum requires that the student take 3 to 8 semester credits in elective coursework, and 58 credits of required courses. The Department advises students to consider elective courses in the areas of psychology, management, principles of education or special education, or the specific Rehabilitation Services Concentration in the Department of Social Work. Before a student can make application into the professional program, ALL the coursework listed for the pre-Physical Therapy portion must be completed or underway. Specifically, Physiology 301 and Anatomy 204 must be completed prior to selection. Once that coursework is near completion, the student must make application for the professional program through the Department of Physical Therapy.

Wyoming residents and WICHE-eligible students must apply by invitation of UND-PT through the WICHE certification process. Selected out-of-state students may be eligible for Physical Therapy Individual Independent Contracts (PTIIC); inquiry should be addressed to the Admissions Coordinator at UND-PT. UND-PT does not accept applications for the professional program from any other out-of-state candidates unless they have completed all of the pre-P.T. coursework at UND. North Dakota residents are strongly encouraged to spend at least one year in pre-P.T. at UND. Applications must be made to the Department no later than March 1 of the year the student wishes to enter the professional program.

Acceptance into Physical Therapy is on a competitive basis, with the major determinant being the basic science grade point average. The basic science grade point average is defined as: biology (8 semester hours), chemistry (8 semester hours), anatomy (3 semester hours), physics (8 semester hours), psychology (7 semester hours — including Intro and Developmental), and physiology (4 semester hours). Reference letters, a personal interview, and other personal qualifications are also considered prior to final acceptance into the professional program. Acceptance by the Office of Admissions of the University of North Dakota does not constitute acceptance into the professional program in Physical Therapy.

See Graduate Section, Physical Therapy, page 215.

Physics

(Phys)

B. Rao (Chair), Chen, Cole, Dewar, Henriksen, Kim, Lykken, Schwalm, and Wagner

The Department of Physics offers a major and minor in Physics and a major in Applied Physics in the College of Arts and Sciences. The Arts and Sciences major in Physics is designed to prepare the students for graduate work in physics or to enable them to participate in physics research as a member of a research team. A student who plans to do graduate work in physics should acquire a reading knowledge of at least one of the foreign languages in which much of the current literature in physics is written, namely, German, Russian and French.

The major in Applied Physics will provide interdisciplinary training in applied physics and engineering design with emphasis on instrumentation.

The Department of Physics offers graduate programs leading to the degree of Master of Science and Doctor of Philosophy. In order to pursue graduate work in physics, the student must have the baccalaureate degree with a major in physics or in applied physics. For more detailed information, see the Graduate School Bulletin.

College of Arts and Sciences

B. S. WITH MAJOR IN PHYSICS

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. The Following Curriculum:

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<th>Hours</th>
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<tr>
<td>36</td>
<td>Math 201, 202, 203</td>
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<td>32</td>
<td>Phys 411, 412, 413, 414</td>
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<td>Chem 101, 102</td>
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<td>12</td>
<td>Phys 404, 405</td>
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<td>Phys 406, 407</td>
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<td>8</td>
<td>Phys 408, 409</td>
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<td>8</td>
<td>Math 303, 304</td>
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<td>12</td>
<td>Phys 415, 416</td>
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<tr>
<td>12</td>
<td>Math 305, 306</td>
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</tbody>
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Other mathematics courses as determined in consultation with an advisor in the Physics department.

B.S. WITH MAJOR IN APPLIED PHYSICS

Required 125 credit hours, including:

I. General Education Requirements, see pages 27-30.

II. The following curriculum:

<table>
<thead>
<tr>
<th>Hours</th>
<th>Course</th>
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<tbody>
<tr>
<td>41</td>
<td>Math 201, 202, 203</td>
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<tr>
<td>32</td>
<td>Phys 411, 412, 413, 414</td>
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<td>Phys 415, 416</td>
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<tr>
<td>12</td>
<td>Math 305, 306</td>
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</tbody>
</table>

MINOR IN PHYSICS

Required 20 hours in Physics. The specific courses should be in consultation with the department.

Courses

101, 102. Introductory College Physics. 8 credits. Prerequisite for 102 is Physics 101. Three hours of lecture-recitation and two hours laboratory per week. Students in the Upper Level are not admitted to this course for credit except in cases where specific departmental curricula require it. General physics for those who do not plan to take advanced courses in science.
171. Natural Science—Physics. 4 credits. Three hours of lecture-recitation and two hours laboratory per week. Prerequisites: None. A study of light, the solar system, stars and galaxies leads the student to learn how science develops an understanding of nature. F

200. Physics for Poets. 3 credits. Prerequisites: None. Knowledge of elementary algebra is recommended. An introduction to the fundamental concepts of physics, especially those discovered and developed in the twentieth century. The course is designed for students who have a limited or non-existent mathematical background, and it attempts to show the picture of the universe which physics offers. On demand

203, 204. General Physics. 8 credits. Prerequisite for Physics 204 is Physics 203. Four hours lecture-recitation and two hours laboratory per week. Prerequisite: College algebra or equivalent. Recommended course for pre-medical students. A student may not receive credit for Physics 203,204 and also Physics 101,102. F S

205, 206, 208. General Physics. 12 credits. Four hours lecture-recitation and two hours laboratory per week. Prerequisites: Math 211 for Physics 205, Math 212 and Physics 205 for Physics 206; and Math 213 and Physics 206 for Physics 208. A sequence for students majoring in a science or engineering. Topics discussed are: classical mechanics, electricity and magnetism, optics, thermodynamics, and introductory modern physics. A student may not receive credit for Physics 205,206 and also Physics 203,204 or Physics 101,102. F S

223. Introduction to Astronomy. 3 credits. Study of the universe: solar system, stars and stellar evolution, black holes, galaxies, big bang cosmology, and the expansion of the universe. F S


256. The Science of Music and Sound. 4 credits. Three hours of lecture and two hours laboratory per week. Prerequisites: None. Knowledge of elementary algebra is recommended. A study of the production, analysis, and perception of musical sounds. On demand

290. 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.

303. Applied Physics Laboratory. 2 credits. Prerequisite: Phy 208 and Math 351. Laboratory introduction to a variety of fabrication and measurement techniques. S/2

311. Foundations of Contemporary Physics. 4 credits. Three hours of lecture-recitation and two hours laboratory per week. Prerequisite: 8 hours of College Physics or consent of instructor. A semiquantitative study of the development of contemporary physics. Physics 311 may not be taken for credit if credit has been received for Physics 208. On demand

317. Mechanics. 3 credits. Prerequisites: Physics 205, 206 or approval of department. Rigid body motion, wave propagation, generalized coordinates and fluid dynamics. S/2

318. Mechanics. 3 credits. Prerequisites: Physics 317 or approval of department. A continuation of Physics 317. Rigid body motion, wave propagation, generalized coordinates and fluid dynamics. S/2

320. Elementary Solid State Physics. 3 credits. Prerequisite: Physics 205,206,208 or approval of department. An introduction to solid state physics with emphasis on applications. S

324. Thermal Physics. 3 credits. Prerequisites: Physics 205,206,208 or approval of department. Thermodynamics with an introduction to statistical physics. S/2

325. Optics. 3 credits. Prerequisites: Physics 205,206,208 or approval of department. Geometrical and physical optics with an emphasis on physical optics. S/2

325L. Optics Laboratory. 1 credit. Corequisite: Physics 205 Laboratory. A course to accompany Physics 325. S

327. Electricity and Magnetism. 3 credits. Prerequisites: Physics 205,206 or approval of department. A quantitative treatment of electro-magnetic theory with an introduction to Maxwell’s equations. F/S


401. Instructional Design. 3 credits. Prerequisite: senior standing. Systematic study and optimal design and/or fabrication of instruments and devices. F

428. Modern Physics Laboratory. 2 credits. Prerequisite: Physics 208 or approval of department. A repetition of the experiments which led to the current state of physics. F

431. Introductory Quantum Physics. 3 credits. Prerequisite: Physics 208 or approval of department. An introduction to quantum mechanics with applications to atomic structure. S/2

434. Nuclear Physics. 3 credits. Prerequisite: Physics 208 or approval of department. An introduction to the theory of the atomic nucleus. On demand

437. Introductory Solid State Physics. 3 credits. Prerequisite: approval of department. Selected topics from solid state physics. S/2


490. Special Problems. 1-3 credits. Prerequisite: approval of the department. F/S

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**Physiology (Phy)**

**Bode, Brown-Borg, Carlson, Haselton, McCleary, Samson, Stinnett, and Vari**

**Courses**

301. Mechanics of Human Physiology. 4 credits. Prerequisites: Introductory courses in two of the following subjects: anatomy, physiology, 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 six hours of formal classroom study including three hours of laboratory and in addition optional review periods each week.

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**Political Science (PSci)**

M. Kweit (Chair), Baker, R. Kweit, Markovich, Pedeliski, and Pynn

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.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.

**College of Arts and Sciences**

**B.A. WITH MAJOR IN POLITICAL SCIENCE**

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. The Following Curriculum:

37 major hours, including:

- Psci 101 American Government I. (3)
- Psci 102 American Government II. (3)
- Psci 220 International Politics. (3)
- Psci 320 Foreign Policies. (3)
- Psci 225 Comparative Politics. (3)
- Psci 323 Issues in Comparative Politics. (3)
- Psci 321 Politics of Public Administration. (3)
- Psci 300 Introduction to Research Methods. (3)
- Psci 311 Political Thought I. (3)
- Psci 312 Political Thought II. (3)
- Psci 405 Political Behavior. (3)
- Psci 432 Public Policy Making Process. (3)
- Psci 495 Senior Colloquium. (1)

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 hours, including:
PSci 101 American Government I ...........................................(3)
Select 6 hours from:
PSci 220 International Politics ...........................................(3)
PSci 225 Comparative Politics ............................................(3)
PSci 231 Politics of Public Administration ................................(3)
Select 6 hours from:
Psci 300 Research Methods .............................................(3)
Political Theory .............................................(Psci 311 or Psci 312 or Psci 318) ...........................................(3)
Constitutional Law .............................................(Psci 305 or Psci 306) ...........................................(3)
Psci 402 State and Local Government ................................(3)
Psci 405 Political Behavior ............................................(3)
6 additional hours of electives from 300 level and above courses in Political Science which may include the courses listed.

Courses
101. 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
102. American Government II. 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
231. Politics of Public Administration. 3 credits. Prerequisite: PSci 101. 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. Prerequisite: a statistics course prior to enrollment. General consideration of research methods and data analysis in political science and the social sciences. F
305. 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
306. American Constitution — Civil Liberties. 3 credits. Analyzes U.S. Supreme Court decisions and interpretations which focus on civil liberties; equal protections, due process, First Amendment rights. F
308. Intergovernmental Relations. 3 credits. Analyzes the growing interrelationship of federal, state and local governments with emphasis on financial aspects. F/S
309. The Legislative and Executive Processes. 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 of which that political life and institutions of the United States from the Puritans 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
337. Cooperative Education. 1-6 credits. Repeatable to 12 credits. Prerequisite: 3.00 GPA; 12 hours in PSci, course related to cooperative experience; permission of department. Compensated on-the-job experience in various areas of political science. S-U grading only. F,S
339. 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
402. Problems in State and Local Government. 3 credits. Undergraduate seminar and research course covering major problems confronting state and/or local governments in institutional design, decision-making systems and public policy. On demand. F
404. Urban Politics and Administration. 3 credits. Prerequisite: PSci 101. Analysis of the socio-economic context of urban America and its impact on politics, policy, and administration. Once per year, F/S, S/S
405. Political Behavior. 3 credits. Prerequisite: Psci 101. 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: Psci 101. 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 third applies 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: PSci 231. 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 PSci; 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,S
491. Readings in Political Science. 1-6 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: PSci 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. Co-requisite: Psci 432 and Psci 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
(Psy)

M. Grabe (Chair), Antes, Ferraro, Foster, Holm, Honts, King, McDonald, Peters, Petros, Plaud, Till, Tyler, Vogeltanz, and Zevenbergen

College of Arts and Sciences

B.A. OR B.S. WITH MAJOR IN PSYCHOLOGY

Required 125 hours, including:
I. General Education Requirements, see pages 27-30.
II. The Following Curriculum:
30 major hours, including:

*Psy 101 Introduction to Psychology ...........................................(3)
Psy 241 Introduction to Statistics ............................................(4)
Psy 303 Research Methods in Psychology ................................(4)
Psy 405 History and Systems of Psychology ............................(3)
Psy 496 Senior Seminar ......................................................(1)
One course from Area A:
Psy 433 Psychology of Learning ..................................................(3)
Psy 434 Physiological Psychology ............................................(3)
Psy 435 Perception ...............................................................(4)
Psy 439 Cognitive Psychology ...................................................(3)
One course from Area B:
Psy 421 Individual and Group Differences .................................(3)
Psy 451 Advanced Developmental Psychology ..........................(3)
Psy 460 Social Psychology .......................................................(3)
Psy 470 Introduction to Clinical Psychology .................................(3)
Psy 410 is prerequisite to all other psychology courses.
Required in other departments:
Level II proficiency in a foreign language
Math 103 College Algebra ....................................................(3)
Math 104 Finite Mathematics ..................................................(3)
Any two of the following:
Biol 101 & 101L Introduction to Biology & Laboratory ................(4)
Biol 102 & 102L Intro to BioScience & Laboratory ....................(4)
Anat 204, 204L Anatomy for Paramedical Personnel (with laboratory) ..................................................(5)
MINOR IN PSYCHOLOGY

Required 20 hours, including:

Psy 101 Introduction to Psychology .................................(3)
Psy 251 Developmental Psychology ..................................(4)
Psy 370 Abnormal Psychology .........................................(3)

Students receiving teaching certification in secondary education (except CSS) must also include:

Psy 241 Introduction to Statistics ........................................(4)
Psy 303 Research Methods in Psychology ..............................(4)

Courses

Psychology 101 is the prerequisite for all other Psychology courses.

101. Introduction to Psychology. 3 credits. Basic prerequisite to all other psychology courses. Nature and scope of psychology as a science and a profession. F.S

102. 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: Mathematics 103 or 104. Descriptive and inferential statistics as applied to psychological measurement and experimentation. F.S

251. Developmental Psychology. 4 credits. Intellectual, emotional and social development of the normal individual; significance of childhood experience for later development. F.S

294. Special Topics in Psychology. 1-3 credits. On demand.

301. Industrial and Organizational Psychology. 3 credits. Prerequisite: 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: Mathematics 103 or 104, Psychology 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: Psy 101 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. Social Psychology. 4 credits. (See Sociology 361). F.S

370. Abnormal Psychology. 3 credits. Prerequisites: Psychology 101 and three additional hours of psychology. Systematic study of behavior pathology, with primary emphasis on etiology and symptomatology. F.S

405. History and Systems of Psychology. 3 credits. Prerequisite: Psychology 303. A consideration of the historical background and development of problem areas in psychology and a survey of contemporary psychological theories. S

421. Individual and Group Differences. 3 credits. Prerequisite: Psychology 241 and 251 or consent of instructor. Origins and consequences of psychological differences among individual and groups with special emphasis on sex differences and racial differences. S

433. Psychology of Learning. 3 credits. Prerequisite: Psychology 303. Principles of animal and human learning, with special emphasis on the acquisition, extinction and retention of learned behavior patterns. S

434. Motivation and Emotion. 3 credits. Prerequisite: Psychology 303. Survey of theories and experimental work on motivation and emotion. S

435. Physiological Psychology. 3 credits. Prerequisites: Biology 101, 102, Psychology 303, or consent of instructor. Physiological basis of psychological functions. F

436. Perception. 4 credits. Prerequisite: Psychology 303. Perceptual basis of behavior. F

438. Brain and Behavior. 3 credits. Prerequisites: Psychology 303, Biology 101, 102 or consent of instructor. The physiological and anatomical mechanisms of learning and memory. S

439. Cognitive Psychology. 3 credits. Prerequisite: Psychology 303. An examination of theory and research on attention, memory, language, comprehension, reasoning, problem-solving, and decision-making. F

450. Child Clinical Psychology. 3 credits. Prerequisites: Psy 251 and 370 and instructor consent. Child psychopathology, etiology, behavior and treatment. S

451. Advanced Developmental Psychology. 3 credits. Prerequisites: Psychology 251 and Psychology 303. In depth analysis of topics covering the entire lifespan, from genetic and prenatal influences to death and dying. Every other year.

460. Advanced Social Psychology. 3 credits. Prerequisites: Psychology 303, 361 (or Sociology 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/W

470. Introduction to Clinical Psychology. 3 credits. Prerequisites: Psychology 241, 370 or consent of instructor. A systematic survey of the field of clinical psychology; basic concepts in diagnosis, psychotherapy, research and professional problems. F

471. Individual Projects in Psychology. 1-4 credits. Repeatable to 8 credits. Prerequisite: consent of instructor. F.S

492. Tutoring in Psychology. 2 credits. Repeatable to 4 credits. Prerequisite: consent of instructor. S-U grading only. F.S

493. Readings in Psychology. 1-3 credits. Repeatable to 8 credits. Prerequisite: consent of instructor. F.S

494. Advanced Special Topics in Psychology. 1-3 credits. Prerequisite: consent of instructor. On demand.

495. Seminar in Psychology. 1-3 credits. Prerequisite: consent of instructor. On demand.

496. Senior Seminar. 1 credit. Prerequisite: Psy 303. Senior Seminar is intended as an opportunity to discuss and integrate recent trends in the field of psychology. The course also provides an opportunity for advanced students to exercise analytical and communication skills related to their training in psychology. S-U grading only. F.S

499. 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

Public Administration

(PSci)

Robert Kweit, Advisor

The Department of Political Science and Public Administration offers undergraduate programs leading to the Bachelor of Science with a major or minor in Public Administration. The B.S.P.A. is offered through the College of Business and Public Administration. The Department also offers the B.A. with a major or minor in Political Science through the College of Arts and Sciences. (See Political Science listed separately in this catalog.) The Public Administration program has a core of liberal arts courses combined with courses from the administrative sciences. The Political Science program provides students with a broad background in the liberal arts. 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.

B.S.P.A. WITH MAJOR IN PUBLIC ADMINISTRATION

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. The applicable College of Business and Public Administration Requirements, see page 39.

III. The Following Curriculum:

Pre-Public Administration Core
Acc 200, 201. Elements of Accounting I & II ........................................(6)
BVED 217. Fundamentals of Management .................................................(3)
Comm 161. Fundamentals of Public Speaking .............................................(3)
Comm 231. Politics of Public Administration ....................................................(3)
Econ 210. Principles of Economics ...............................................................(3)
Math 103. College Algebra .............................................................................(3)
Math 104. Finite Mathematics .........................................................................(3)
PSci 300. Introduction to Research Methods ....................................................(3)
PSci 309. Legislative and Executive Processes ..................................................(3)
PSci 481. Urban Politics and Administration .....................................................(3)
PSci 432. Public Policy Making Process .............................................................(3)
PSci 437. Administrative Processses .................................................................(3)
PSci 493. Professional Projects in Public Administration ....................................(3)
Econ 324. Public Finance .................................................................................(3)

or

Econ 210. Principles of Economics ...............................................................(3)
Math 103. College Algebra .............................................................................(3)
Math 104. Finite Mathematics .........................................................................(3)
PSci 300. Introduction to Research Methods ....................................................(3)
PSci 309. Legislative and Executive Processes ..................................................(3)
PSci 481. Urban Politics and Administration .....................................................(3)
PSci 432. Public Policy Making Process .............................................................(3)
PSci 437. Administrative Processses .................................................................(3)
PSci 493. Professional Projects in Public Administration ....................................(3)
Reserve Officer Training Corps
Air Force (AFROTC)

A Nonhost Agreement exists between Air Force ROTC, North Dakota State University and the University of North Dakota. The AFROTC program is conducted by the Department of Aerospace Studies at NDSU. The purpose of this program is to enable qualified undergraduate and graduate students to become commissioned officers in the United States Air Force. Upon graduation and completion of the AFROTC curriculum each student is commissioned a second lieutenant in the United States Air Force.

UND students wishing to participate in the AFROTC program should contact the Department of Aerospace Studies at NDSU, P.O. Box 5196, Fargo, North Dakota.

The General Military Course (GMC) a four semester program, begins with a study of the role of U.S. military forces in the contemporary world with particular emphasis on the United States Air Force organization and mission. The functions of the strategic offensive and defensive forces, general purpose and aerospace support forces are studied.

The last two semesters include an historical review of air power development, assessment of the use of military air power during 20th century wars and conflicts, and a discussion of peacetime uses of air power.

Courses

AS 111. The Air Force Today. 1 credit. Survey of the USAF and how it is structured, operated, and relates to the other armed services. Orientation to the modern Air Force and its broad missions.

AS 212. The Air Force Today II. 1 credit. Supply of Aerospace defense, missile defense, U.S. general purpose and Aerospace support forces; tactical Air Forces; review Army, Navy, and Marine general purpose forces.

AS 210. Leadership Laboratory. 0 credits. Introduction to Air Force customs and courtesies, drill, and ceremonies.

AS 211. The Air Force Way I. 1 credit. Introduction of air power development and historical treatment of the period preceding the Wright brothers to WWII.

AS 212. The Air Force Way II. Assessment of military air development from WWII to the present.

Professional Officer Course (POC)

The Professional Officer Course, taken during the student’s junior and senior years, concentrates on four main themes: communicative skills, national security forces in contemporary American society, the principles and practices of management, and leadership in the U.S. Air Force.

POC 321. Air Force Leadership/Management. 3 credits. Introduction to management within the USAF, emphasizing communication skills, both oral and written formats peculiar to the Air Force and interpersonal skills. Study of the Total Quality Management philosophy in relation to planning, organizing, directing, coordinating, and controlling.

POC 322. Air Force Leadership/Management II. 3 credits. Study of leadership from the military perspective emphasizing situational leadership and contemporary issues including change management and professional ethics. Film case studies are used to illustrate leadership concepts. Officer professional development topics are discussed.

POC 410. Leadership Laboratory. 1 credit. Development of leadership skills in a practical, supervised laboratory where students instruct, supervise, and lead junior cadets participating in AS 210. Leadership Laboratory, and perform higher level management functions within the cadet corps organization.

POC 441. Preparation for Active Duty I. 3 credits. Study of the American national security policy and process, past and present.

POC 442. Preparation for Active Duty II. 3 credits. Study of military professionalism, Air Force doctrine, and military law. Course is directed at preparing officer candidates for Air Force active duty.
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. A reading proficiency in a foreign language (Level IV) is strongly recommended for those students who plan to enter the professions or graduate work. Consult your advisor on this matter.

Arts and Sciences students who wish to declare the “teaching major” should also complete the equivalent of a major in a single social science and should consult the Arts and Sciences and the College of Education and Human Development offices at an early date. Please see Teaching and Learning (T&L) for the Social Science Education program requirements.

College of Arts and Sciences

T. Rand, Advisor

B.A. WITH MAJOR IN SOCIAL SCIENCE

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. The Following Curriculum:

60 hours

Select courses in the pattern listed below from Anthropology, Economics, Geography*, History, Political Science, and Sociology. At least 24 hours must be in Upper Level work.

21 hours in one department.

12 hours in another department.

9 hours in each of three of the remaining departments.

*For Geography courses carrying Social Science Credit, see pages 27-30.

Social Work

(SWk)

M. Jacobsen (Chair), Furman, Haagenstad, Haga, Heitkamp, B. Jacobsen, Klinkhammer, Kraft, Perry, Remboldt, and Woehle

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. Social work courses are open to sophomores, juniors and seniors. 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 with the department at the beginning of the freshman year, if possible. At that time students will be assigned an advisor 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:

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. Criteria for admission are as follows:

(1) completion of 45 semester hours of course work.

(2) attainment of a cumulative GPA of 2.40 or better.

(3) completion of four social work courses: 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) with a grade of “C” or better. The combined GPA for these four courses must be at least 2.50.


(5) 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 advisor.

(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. Therefore, a maximum of forty students may be admitted each year. 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 an overall GPA of 2.40 and a grade of “C” or better in all social work courses (base) in which they were enrolled prior to enrolling in Field Instruction.

Students transferring to the UND Department of Social Work, who have completed social work courses at other institutions, will only receive credit for course work taken from a CSWE accredited BSW 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 must complete the field practicum experience during the last semester in which they are enrolled prior to graduation.

College for Human Resources Development

B.S. IN SOCIAL WORK

Required 125 hours including:

I. General Education Requirements, see pages 27-30.

II. College of Education and Human Development, see page 44.

III. The Following Curriculum.

A. Base (41 hours)

SWK 200 .................. Intro to Helping Skills ...........................................(2)

SWK 255 .................. Social Work in a Modern Society ............................(3)

SWK 256 .................. Social Welfare .........................................................(2)

SWK 257 .................. Human Behavior in the Social Environment ............(4)

SWK 322 .................. Foundation for Generalist Social Work Practice .......(2)

SWK 333 .................. Research and Statistics in Social Work I ....................(3)

SWK 334 .................. Research & Statistics in Social Work II ....................(3)

SWK 418 .................. Social Policy Analysis .............................................(2)
SWK 450 Social Work Practice with Micro Systems (3)
SWK 454 Social Work Practice with Large Systems (3)
SWK 460 Senior Seminar (2)
SWK 487 Field Instruction (4-10)
SWK 488 Field Instruction Seminar (1-2)
B: Required in other departments (38)
Bio 100 Principles of Biology (4)
Comm 161 Fundamentals of Public Speaking (3)
Economics (3)
Political Science 101 American Government I (3)
History (three credit hour course only). (6)
Psychology (upper division) (6)
Sociology (upper division) (6)
Cultural Diversity*(6)

*Selected from the following:
Anth 171 Intro to Cultural Anthropology (3)
Anth 379 Culture Area Studies (3)
Anth 465 Culture, Illness & Health (3)
A&S 225 Intro to Study of Women (3)
Engl 357 Women Writers & Readers (2-4)
Engl 365 Black American Writers (3)
Engl 367 American Indian Literature (2)
IS 121 Intro to Indian Studies (3)
IS 203 Intro Survey of Chippewa History (3)
IS 207 History of Three Affiliated Tribes (3)
IS 235 Cross-Cultural Seminar (2)
IS 301 History of Western Sioux (3)
IS 330 Contemp Plains Indian Culture (3)
IS 345 Contemp Amer Indian Issues (3)
SWK 358 Contemp Issues in Rehab. (2)
Soc 436 Social Inequality (3)

A total of 38 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 are encouraged to declare either a University approved minor or, in conjunction with their adviser, develop a unique set of elective courses tailored to their future professional interests. This selection should be made at the time of admission to the Department and should be made after consultation with the faculty advisor.

**REHABILITATION SERVICES MINOR**

Required: 20 hours including:

1. Twelve hours from the following:
   - SWK 358 Contemporary Issues in Rehabilitation (2)
   - SWK 455 Rehabilitation Process (2)
   - SWK 457 Vocational Development in Rehabilitation (2)
   - SWK 475 Testing and Assessment (3)

2. Eight hours from the following:
   - Anat 204 Anatomy for Paramedical Personnel (3-5)
   - CTL 315 Education of Exceptional Students (3)
   - CTL 416 Functional Curricula for Students with Moderate Mental Retardation (3)
   - CDis 343 Language Development & Disorders (3)
   - HPER 360 Recreation/Leisure Services for Individuals with Disabilities (3)
   - HPER 361 Principles of Therapeutic Recreation (3)
   - PT 480 Psychological Aspects of Disability (2)
   - Psy 370 Abnormal Psychology (3)
   - SWK 311 Child Welfare (3)
   - SWK 342 Social Work and the Legal Process (2)
   - SWK 375 Community Living Topics (3-6)

**GERONTOLOGY MINOR**

Required: 20 hours including:

1. The following eleven hours:
   - SWK 354 Orientation to Gerontology (2)
   - Soc 352 Aging (3)
   - Psy 355 Adulthood and Aging (3)
   - Nurs 418 Physical Changes of Aging (3)

2. Nine hours from the following:
   - CDis 365 Aging and Communication Processes (3)
   - Phil 101 Philosophy and Life (3)
   - Phil 210 Introduction to Ethics (3)
   - IT 206 Recreational Crafts (3)
   - IT 300 Technology, Society and the Individual (2)
   - HPER 360 Recreation/Leisure Services for Individuals with Disabilities (3)
   - HPER 362 Leisure Education and Counseling (3)
   - HPER 363 Recreational Activities for the Elderly (3)
   - Psy 241 Individual and Group Differences (3)
   - Soc 353 Sociological Insights of Death and Dying (3)
   - Soc 354 Medical Sociology (3)
   - FCS 470 Methods of Adult Education (2)
   - FCS 240 Fundamentals of Nutrition (3)
   - FCS 361 Personal and Family Finance (3)
   - SWK 246 Human Behavior in the Social Environment (4)
   - SWK 306 Social Welfare (2)
   - IS 121 Introduction to Indian Studies (3)

With current approval of the student adviser and the committee chairperson 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 credit hours including:

1) The following:
   - *SWK 410. Drugs: Addiction Dynamics (2)
   - *PTEx 410. Drugs Subject to Abuse (2)
   - Soc 355. Drugs and Society (3)

2) Thirteen from the following:
   - Soc 102 Social Problems (3)
   - *Soc 355 The Family. (3-4)
   - Psy 360 Introduction to Personality (3)
   - Psy 370 Abnormal Psychology (3)
   - *CTL 350 Development & Education of Adolescents (3)
   - PTEx 402 Introduction to Addictions (3)
   - PTEx 490 Readings in Pornography (3)
   - Comm 301 Psychology of Communication (3)
   - SWK 309 Medical & Psychosocial Aspects of Disability (3)
   - IS 345 Contemporary American Indian Issues (3)
   - EHD 495 SP: International School of Alcohol Studies (1)
   - *Coun 565 Dynamics of Addiction Seminar: Special Topics in Chemical Use/Abuse (2)

*Course required for licensing in addiction counseling.
**Student must be senior status or graduate level to enroll in this course.

**Other minors:**

Additional minors that the social work major should consider are Criminal Justice Studies, Psychology, Sociology, Spanish, Communication or Indian Studies.

**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) 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 includes 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: Soc 101, Pol Sci 101 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
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257. Human Behavior in the Social Environment. 4 credits. Prerequisites: Psy 101, Biol 100 and Soc 101. This foundation course uses ecological/social systems theory as the overall conceptual framework. Bio-psycho-socio-cultural aspects of human development are emphasized along with a recognition of the 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

309. Medical & Psychosocial Aspects of Disability. 3 credits. This course offers a basic medical and psychosocial understanding of disability for human service workers. Primary emphasis is on medical terminology; causes, treatment, and prognosis of major disabilities; and the vocational and psychosocial impact of selected disabling conditions. 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. S

322. Foundation for Generalist Social Work Practice. 2 credits. Prerequisite: Formal admission to the BSSW 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 in Social Work I. 3 credits. Prerequisite: Formal admission to the BSSW program or consent of the instructor. This course provides an orientation to current research practices in social work. Emphasis is placed on the scientific and systematic evaluation of service delivery and personal professional practice. An introduction to statistical analysis in social work settings is provided. F

334. Research and Statistics in Social Work II. 3 credits. Prerequisite: SWK 333. This course provides a further development of current research practices in social work. 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 social work practice. In addition, students will learn how to obtain solutions to statistical problems through the use of computer programs. S

337. Cooperative Education. 1-6 credits. Prerequisite: SWK 322 or consent of instructor. This course offers students individually supervised field practicum 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

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

354. Orientation to Gerontology, 2 credits. A general introduction to gerontology including the study of the aging process, the relationship between the theoretical and practical aspects of aging, and the interdisciplinary nature of practice. F

358. Contemporary Issue in Rehabilitation. 2 credits. This course introduces students to contemporary issues in the field of rehabilitation. Topics include: the concept of disability, political and social influences on rehabilitation, attitudes toward disability, accessibility, media impact, family concerns, and community integration of persons with disabilities. F,S

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. On demand. F

410. 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. S

418. Social Policy Analysis. 2 credits. Pre- or corequisite: SWK 333 or consent of the instructor. This course provides the opportunity to develop knowledge of social welfare policy including financial assistance policy; social service policy; ideology and values; policy making processes; and, the regional context. The emphasis is on policy analysis including the use of information by government and social service agencies; the application of theories and models; and, data collection. F,S

450. Social Work Practice with Micro Systems. 3 credits. Prerequisite: Formal admission to the BSSW program and Swk 322. This course is designed to provide knowledge about generalist social work practice with individuals in groups and individuals in families. This course includes the required knowledge, values, and skills necessary for practice with micro systems. Students will continue to build on the problem solving model as they apply the skills acquired in Swk 200. An opportunity for skill development will be provided in the practice lab. F,S

454. Social Work Practice with Large Systems. 3 credits. Prerequisites: SWK 450 or consent of instructor. Prerequisite: Swk 418. The focus of this course is on the study of the knowledge, values and skills necessary for practice with large systems. The role of the generalist in social work practice in organizations, communities and formal groups is emphasized, including social environments to human betterment and large systems social change. An opportunity for skill development will be provided in the community. F,S

455. Rehabilitation Process. 2 credits. This course examines the history, philosophy, and ethical standards of the rehabilitation profession. Topics include the following: legislation affecting persons with disabilities, public and private rehabilitation systems, case management principles, and community resources utilized in rehabilitation programs. F

457. Vocational Development in Rehabilitation. 2 credits. This course examines the social and economic impact of work in our society and how people with disabilities can become employed. Topics include the following: employment opportunities and barriers, vocational planning, work adjustment training, job development, occupational information, affirmative action, and vocational placement strategies.

460. Senior Seminar. 2 credits. This course is designed to provide an integrative experience for the senior social work student. The focus will be on the exploration of the philosophical and ethical base of the profession and professional education. Professional issues and ethical dilemmas will provide the context for the further development and application of critical thinking and decision making skills. F,S

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 sample batteries, and situational assessment. S

487. Field Instruction. 4-10 (repeatable to 10 credits). Prerequisites: SWK 454 and 460. Corequisite: SWK 488. SU grading only. This course consists of a one semester block placement requiring 40 hours weekly in an approved social welfare agency. The agency-based practicum will provide students with learning opportunities to develop and integrate social work knowledge, values and skills for beginning level generalist practice. Learning opportunities will emphasize the integration of research, problem solving processes and skills, knowledge of social welfare programs and policies, understanding human behavior in the environment, and values and ethics of the social work profession. Upon completion of the field practicum, students will have experienced practice with individuals, groups, families, organizations and communities. An evaluation of student performance will be completed by field instructors and department faculty. Application for Field Instruction must be submitted two semesters preceding the semester of placement. Students will also be requested to contact the Field Coordinator to submit a plan for field instruction. F,SS

488. Field Instruction Seminar. 1-2 credits (repeatable to 2). Prerequisites: SWK 454 and 460. Co-requisite: SWK 487. This seminar integrates classroom content with actual practice through written assignments and seminar discussion. F,S,SS

493A. Special Topics. 1-3 credits. Repeatable to a maximum 6 credits. Prerequisite: SWK 255 or consent of instructor. Individually or group supervised research or interdepartmental studies and seminars in social work related areas. F,SS

Sociology (Soc)

J. Larson (Chair), Crawford, Driscoll, Ender, Huang, Hume, Ludtke, Meyer, Moen, Staples, Stofferahn, Tiemann, and White

This department offers a major and minor in sociology and it houses the program in Criminal Justice. 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 nine as the last digit 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 123 hours, including:

I. General Education Requirements, see pages 27-30.

II. The following Curriculum:

1. Electives in Sociology. 3 credits. (Soc)

2. 33 major hours, including:

   Soc 301 ........................Basic Sociology Theory ....................(3)
   Soc 323 ........................Sociological Research Methods ..........(3)
   Soc 326 ........................Sociological Statistics ...................(3)
   Soc 361 ........................Social Psychology .........................(4)

3. 9 hours from:

   Soc 306 ........................Social Change ............................(3)
   Soc 335 ........................The Family .................................(3)
   Soc 431 ........................Organizations and Behavior ............(3)
   Soc 435 ........................Racial and Ethnic Relations ............(3)
   Soc 436 ........................Social Inequality .........................(3)
   Soc 437 ........................Population ...............................(3)
   Soc 450 ........................Community Behavior ....................(3)

4. 11 hours from:

   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 hours (at least nine of which must be numbered 300 or above) in any single subject matter taught at this University.

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MINOR IN SOCIOLOGY

Required 22 hours, including:
- Soc 301. Basic Sociological Theory. (3)
- Soc 323. Sociological Research Methods. (3)
- At least nine of the other credits must be taken in courses numbered 300 and above.

Courses

101. Introduction to Sociology, 3 credits. An introductory analysis of the nature of society, the interrelationships of its component groups and the process whereby society persists and changes. Interpretation of human behavior from the standpoint of the group. Students wishing to earn credit from Sociology 101 by means of independent study should obtain information from the University Counseling center on the CLEP examinations administered there. Sociology 101. F, S

102. Social Problems, 3 credits. A sociological analysis of major social problems in America. F

250. Diversity in American Society, 3 credits. Prerequisite: Soc 101. An introductory survey of the racial, ethnic and cultural mosaic of American Society. Basic theories of intergroup relations, prejudice and discrimination are covered. S

253. 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

254. 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 101. 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

306. Social Change, 3 credits. Prerequisites: 6 hours of sociology. 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: Sociology 301 or CJS 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

337. Cooperative Education, 1-4 credits repeatable to 12. A practical work experience with an employer closely associated with student's academic area. F, S, SS

338. Personal and Family Finance, 3 credits. Analysis of personal and family financial decisions, resources, and planning as related to life cycle, socio-cultural, and economic contexts. Includes discussion of cash management, credit, insurance, investments, retirement and estate planning. On demand.

340. Sociology of Gender and Sex Roles, 3 credits. Prerequisite: Soc 101 or Soc 102 or Soc 250. 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 CJS 251. 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. S

353. Sociology of Death and Dying, 3 credits. The study of social aspects of death and dying as they involve the individual, the family, organizations, and life-and-death decisions. S

354. Medical Sociology, 3 credits. Prerequisite: Soc 101 or Soc 102. 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: Sociology 101 or Psychology 101. (Same course as Psychology 361). 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

407. Political Sociology, 3 credits. Prerequisite: 6 hours of Soc or consent of instructor. 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. F

430. Sociology of Education, 2-3 credits. Prerequisite: 6 hours of Soc or consent of instructor. Analysis of education as a social institution, the school as a social system and the professional and organizational role of teachers, the school and problems of the community. 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

435. Racial and Ethnic Relations, 3 credits. Prerequisite: Soc 301 or CJS 301 and Soc 250. A Survey of major USA racial and ethnic groups, the histories of their social encounters, and the theoretical perspectives associated with their experiences. F

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

497. Practicum in Sociology, 3 credits. Prerequisites: Soc 303, 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. S/U grading only. F, S

498. Readings in Sociology, 1-5 credits. Prerequisite: Consent of instructor. Designed 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

499. Senior Honors Thesis, 1-15 credits; total not to exceed fifteen. Prerequisites: Consent of the Department and approval of the Honors Committee. Supervised independent study culminating in a thesis. F, S

12 credits of VA History including VA 210 and 211.

Space Studies

(SpSt)

C. Wood (Chair), Gabrynowicz, Sielestad, and Williams

Center for Aerospace Sciences

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 high-tech areas in a major field of study.

Political, legal, and scientific aspects are dealt with extensively, and key technologies are introduced. Whether or not the student goes on to a career in the space field, useful knowledge will be gained regarding the development and operation of high-tech systems.

MINOR IN SPACE STUDIES

Required 20 hours, including:
- SpSt 200. Introduction to Space Studies. (3)
- SpSt 491. Independent Study. (2)
- 12 hours from:
  - SpSt 405. Advanced Space Mission Design. (3)
  - SpSt 410. Life Support Systems. (3)
  - SpSt 420. Space Science & Exploration. (3)
  - SpSt 425. Multi-disciplinary 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 470. Special Topics in Space Studies. (3)

Space Studies electives... (3)

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 flight and human 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. F/S
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. S

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. F

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 processes and physical characteristics of the planets. S

425. Observational Astronomy. 3 credits. 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 Observing System technologies, including research goals and hardware requirements, are examined. F

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. S

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 government-sponsored programs is examined. S

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. F

470. Special Topics in Space Studies. 1-3 credits. Prerequisite: consent of instructor. Lecture, discussion and readings on specific topics of current interest. May be repeated for credit if 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. F,S

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 weekly meetings with the student’s assigned adviser. F,S

The Department strives to model the kind of educational environment it is promoting in early childhood settings, elementary schools, middle/junior high schools and secondary schools. Students are encouraged to assume initiative and independence in their learning while developing personal and professional competencies 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 of North Dakota and accredited by the National Council for the Accreditation of Teacher Education. 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/junior high, and secondary school teachers. Students studying elementary education are able to pursue specialized study resolving in a combined major in visual arts, early childhood education, physical education, music, 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
- French
- Geography
- Industrial Technology
- Music
- Physical Education
- Social Science
- Spanish
- Speech
- Visual Arts

The appropriate sequences of courses and experiences for these majors are outlined under the specific departments offering the majors. See page 44 under the College of Education and Human Development for information regarding admission to teacher education, graduation and teacher certification requirements, and other requirements of teacher education students.

B.S. ED. WITH MAJOR IN EARLY CHILDHOOD EDUCATION

I. General University Graduation Requirements, see pages 27-30
II. EHD General Graduation Requirements, see page 44
III. The following Early Childhood Education curriculum:

A. General Education: Comprehensive Electives
B. Early Childhood General Education
C. Early Childhood Education Specialization

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.

Teaching and Learning (T&L)

L. Chalmers (Chair), Barrentine, Baker/Bigback, Bonn, Fuller, Gersham, Guy, Hanhan, Hanley, Harris, Hoover, Kelley, Knowlton, Nelson, Olsen, Olson, Shaheffer, Stackeck, Uhlenberg, Zidon

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.
MINOR IN EARLY CHILDHOOD EDUCATION

20 credits including:
- T&L 310 Introduction to Early Childhood Education (3)
- T&L 486 Field Experience: ECE (3)
- T&L 313 Young Children’s Language and Thought (3)
- T&L 314 Social & Emotional Lives of Young Children (3)
- T&L 451 Methods & Materials: Pre-K (3)
- T&L 252 Child Development (3)
- T&L 454 Organization, Administration & Supervision in Early Childhood Education (2)

B.S. ED. WITH MAJOR IN ELEMENTARY EDUCATION

Required 125 hours, including:
I. General University Graduation Requirements, see pages 27-30.
II. General Graduation Requirements.

Communication — 9 credits
(English 101, 102, or EN 109)

Social Sciences — 12 credits
From 3 departments including Psychology 251 or Teaching and Learning 252 (but not both); 9 additional credits of University General Education courses from Anthropology, Economics, Geography, Political Science, Psychology (except 251), Sociology, or Indian Studies.

Arts and Humanities — 15 credits
From 3 departments including 9 credits from English, History, or Humanities I and II, including courses from at least two departments; 3 credits of studio visual arts (VA 100, 120, 130, 151, 173, 260) and/or performance classes from music (Music 105, 260, 261, 262, 264, 265, 269), Theater (TA 200, 225, 227, 229), dance (HPER 101 Jazz and Modern Dance), and 3 credits of electives from University General Education courses on pages 27-31.

Math, Science, Technology — 12 credits
Must be taken at least 2 departments, must include 4 hours of lab science, and must include Mathematics 103, 104, 105 or a course for which one of these is a prerequisite, or a score on the Mathematics Department placement test that qualifies the student to register for Math 211.

Students must have coursework in the biological, physical, and earth sciences. This coursework may be selected from the General Education course list or from a combination of such courses and T&L 440 science courses. Note that T&L courses do not apply toward the General Education Requirement. Students must also demonstrate competence in microcomputer operation and word processor use. This can be done by gaining credit in CS 101 or 105, or by demonstrating competence to designated faculty or staff.

III. Area of Concentration:
Each student must have an area of concentration of 15 or more credits in one of the following areas: English, history, fine arts, social science (anthropology, political science, geography, social science, or economics); mathematics, science (non-T&L); a single foreign language, Indian Studies, Women Studies, Psychology, Sociology, Special Education, Early Childhood Education, Physical Education, Bilingual Education/ESL or Interdisciplinary Studies.

Except in science, social science, fine arts, or foreign language, 9 of the 15 credits must be above the 100 level. Lists of appropriate courses for this concentration are available through your advisor.

IV. Introductory Courses:
- Math 277 Mathematics for Elementary School Teachers (3)
- T&L 420 or 429 Children’s or Young Adult Literature (3)
- T&L 315 Education of Exceptional Student

TEAM:
- T&L 410 Reading and Language Arts (TEAM) (3)
- T&L 420 Writing in the Elementary School (TEAM) (2)
- T&L 430 Social Studies in the Elementary School (TEAM) (3)
- T&L 440 Math in the Elementary School (TEAM) (2)
- T&L 470 Science in the Elementary School (TEAM) (2)
- T&L 486 Field Experience (TEAM) (2)

Advanced Courses:
(TEAM in a prerequisite)
- T&L 411, 412, or 413 Primary, Intermediate, or Corrective Reading (2)
- T&L 432 Classroom Management (3)

Additional Required Courses:
One of the following three courses:
- HPER 310 First Aid and CPR (2)
- HPER 327 Fitness for Life (3)
- HPER 408 School Health Education (Early Ed. Combined majors may substitute) (2)

T&L 433 Multicultural Education (TEAM prerequisite) or Indian Studies 121 (3)
- Fine Arts Methods Course (3)
- Elementary Education Electives (4)

T&L 487 Student Teaching (10-16)

SAMPLE PROGRAM OF STUDY

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>Engl 101</td>
<td>Composition I</td>
<td>(3)</td>
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<tr>
<td>Engl 102</td>
<td>Composition II</td>
<td>(3)</td>
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<tr>
<td>or Engl 209</td>
<td>Technical &amp; Bus Writing</td>
<td>(3)</td>
</tr>
<tr>
<td>or Comm 161</td>
<td>Fundamentals</td>
<td>(3)</td>
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<tr>
<td>T&amp;L 252</td>
<td>Child Development</td>
<td>(3)</td>
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<tr>
<td>or HPER 205</td>
<td>Physical Educ for Elem School Teachers</td>
<td>(3)</td>
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<tr>
<td>T&amp;L 428</td>
<td>Children’s Literature</td>
<td>(3)</td>
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<tr>
<td>T&amp;L 330</td>
<td>Teaching and Learning</td>
<td>(3)</td>
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<tr>
<td>Elective</td>
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<td>(3)</td>
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Sophomore Year

| Social Science elective | (3) |
| Math/Science elective | (3) |
| Concentrations         | (6) |
| Math 277               | Math for Elementary School Teachers | (3) |
| HPER 205               | Physical Educ for Elem School Teachers | (3) |
| T&L 428                | Children’s Literature | (3) |
| T&L 330                | Teaching and Learning | (3) |
| Elective               |               | (3)            |

Junior Year

| T&L 315 | Education of the Exceptional Student | (3) |
| T&L 433 | Classroom Management                | (3) |
| Electives |                                      | (6) |
| T&L 433 | Multicultural Education             | (3) |

Senior Year

| T&L 487 | Student Teaching                    | (16) |

| Electives |               | (12-17) |

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 Young Children’s Language & Thought (3)
T&L 415 Reading & Writing Development of Bilingual & Second Language Learners (2)
T&L 433 Multicultural Education (3)
IS 121 Introduction to Indian Studies (3)
T&L 486 Field Experience: Bilingual & ESL (2)
Engl 207 Introduction to Linguistics (3)
Engl 370 Language and Culture (3)
Engl 419 Teaching English as a Second Language (3)

Six credit hours in a modern language. (Teachers planning to work with American Indian students should take appropriate American Indian languages.) Three elective credits in English chosen in consultation with advisor.

B.S.E.D. WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND EARLY CHILDHOOD

Required 125 hours, including:
I. General Education Requirements, see pages 27-30.
II. EHH General Graduation Requirements, see page 44.
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 Observation and Description of Young Children (3)
- T&L 313 Young Children’s Language and Thought (3)
B.S.E.D. WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND PHYSICAL EDUCATION

Required 125 hours, including:
I. General Education Requirements, see pages 27-30.
II. EHD General Graduation Requirements, see page 44.
III. Elementary Education Curriculum as listed above.
IV. The Following Physical Education Curriculum:
   HPER 107 .............. Introduction to Physical Education ......... (3)
   HPER 205 .............. Physical Education for the Elementary Grades ... (3)
   HPER 223 .............. Movement Performance Analysis Labs. .... (6)
   HPER 310 .............. First Aid and CPR ......................... (2)
   HPER 323/331L........ Introduction to Teaching in Physical Education and Sport and Sport Settings/ Lab ...... (4)
   HPER 355 .............. Applied Motor Development .......... (3)
   HPER 403 .............. Physical Education ......... (3)
   HPER 404 .............. Adapted Activities Program ....... (2)
   HPER 406/406L ..... Strategies for Teaching Physical Education in the Lab ... (4)
   HPER 487 .............. Senior Teaching Seminar .......... (2)
Total: 31 credit hours

B.S.E.D. WITH COMBINED MAJOR IN ELEMENTARY EDUCATION AND VISUAL ARTS

Required 125 hours, including:
I. General Education Requirements, see pages 27-30.
II. EHD General Graduation Requirements, see page 44.
III. Elementary Education Curriculum as listed above.
IV. The Following Visual Arts Curriculum:
Minimum requirement of 12 credits of VA History including VA 210 and 211.
Minimum requirement of 36 credits of VA practicum (studio) courses.
Core Requirements:
   VA 108 .............. Hand and Power Tool Safety ............... (1)
   VA 130, 131 ... Drawing I, II ........................................ (6)
   VA 173, 174 .... Design I, Two-Dimensional; Design II: Three-Dimensional .... (6)
   VA 210 .............. Art History Survey: Paleolithic to Renaissance ... (3)
   VA 211 .............. Art History Survey: Renaissance to Present .... (3)
Plus at least 9 credits in the following:
   VA 201, 202 .... Sculpture I, II ........................................ (3, 3)
   VA 204, 205 .... Jewellerymaking I, II .................................. (3, 3)
   VA 220, 221 ... Painting I, II ........................................... (3, 3)
   VA 230, 231 .... Figure Drawing I, II ................................. (3, 3)
   VA 240 .............. Printing I: Intaglio ................................. (3)
   VA 241 .............. Printing I: Relief and Serigraphy .......... (3)
   VA 251 .............. Ceramics I ........................................ (3)
   VA 253 .............. Ceramics II: Throwing .......................... (3)
   VA 259 .............. Slide Photography ................................. (3)
   VA 261 .............. Color Printing ....................................... (3)
   VA 274 .............. Calligraphy ........................................... (3)
   VA 276 .............. Surface Design on Fabric ......................... (3)
   VA 277 .............. Fibers I ............................................. (3)
Plus a MINIMUM of 20 credits in courses selected from the following list:
   VA 302, 303 .... Sculpture III, IV .................................... (3, 3)
   VA 304, 305 .... Jewelry & Small ................................. (3, 3)
   VA 306, 307 .... Sculpture II, III, IV ................................. (3, 3, 3)
   VA 322, 323 ... Painting III, IV ....................................... (3, 3)
   VA 332, 333 ... Figure Drawing III, IV ............................. (3, 3)
   VA 340 .............. Printing II: Lithography ......................... (3)
   VA 341 .............. Printmaking III: Plate & Color Lithography ... (3)
   VA 342, 343 .... Printing III, III: Intaglio .......................... (3, 3)
   VA 344, 345 .... Printing II, III: Serigraphy ....................... (3, 3)
   VA 351 .............. Ceramics II: Sculpture ......................... (3)
   VA 353 .............. Ceramics III: Throwing .......................... (3)
   VA 355 .............. Clay & Glazes ....................................... (3)
   VA 361 .............. Concepts in Visual Arts Education .......... (2)
   VA 365, 366 .... Photography Studio I, II .......................... (3, 3)
   VA 371, 372, 373 ... Fibers II, III, IV ............................... (3, 3, 3)
   VA 375 .............. Brush Lettering & Sign Painting .......... (3)
   VA 379 .............. Color Theory ......................................... (3)
   VA 391a, 391b ... Special Topics .................................... (1-4)
   VA 410 .............. Art History: Selected Topics ................... (1-4)
   VA 412 .............. Art History: 20th Century (to 1930s) .... (3)
   VA 413 .............. Art History: 20th Century (1930s to present) .... (3)
   VA 490 .............. Special Projects/Independent Research (variable credit—dependent upon scope of project) .... (1-12)
Middle/Junior High School Education

B.S. ED. WITH MAJOR IN MIDDLE/JUNIOR HIGH SCHOOL EDUCATION

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. EHD General Graduation Requirements, see page 44.

III. The Following Middle/Junior High School Education (Grades 5-9) Curriculum:

- T&L 350: Development and Education of Adolescents (3)
- T&L 341: Curriculum Development and Instruction (3)
- T&L 400: Methods and Materials (3)
- T&L 409: Reading in the Content Areas (2)
- T&L 410: Reading and Language Arts (TEAM) (4)
- T&L 420: Writing in the Elementary School (TEAM) (3)
- T&L 430: Social Studies in the Elementary School (TEAM) (3)
- T&L 433: Multicultural Education (2)
- T&L 440: Math in the Elementary School (TEAM) (2)
- T&L 470: Science in the Elementary School (TEAM) (2)
- T&L 486: Field Experience: Pre-Student Teaching (2)
- T&L 487: Student Teaching in Middle/Junior High School (16)

IV. Subject Matter Courses (45 credit minimum)

Students must select a minimum of 45 credits of work in two subject areas that are normally included in the Middle/Junior High School Curriculum (i.e. science, mathematics, physical education, etc.). The 45 credits may be divided more or less evenly between the two areas (i.e. 23 credits in English and 22 credits in history) or they may be focused more heavily in one area (27 credits in English and 18 credits in history) but must include at least 18 credits in each area in order to meet certification requirements. One-half of the credits in each area must have a catalog identification number of 200 or above (an exception may be granted to students pursuing a very broad preparation in science).

B.S.ED. WITH MAJOR IN SCIENCE

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. EHD General Graduation Requirements, see page 44.

III. The Following Science Curriculum:

Biol 101, 102: Introduction to Biology (6)
Biol 103, 103L: Introduction to Biology Laboratory (2)
Chem 101, 102: General Chemistry I and II (8)
Chem 204, 205: Quantitative Analysis (8)
Math 211, 212: Calculus I and II (8)
Phys 205, 206: General Physics (8)
Phys 311: Foundations of Contemporary Physics (3)
Phys 321: Methods of Experimental Science (2)

4-3 hours from the following:

Biol 341: Cell Biology (3)
Biol 357: Genetics (3)
Biol 442: Physiology of Organs & Systems (4)

3-4 hours from the following:

Biol 316: Systemic Botany (4)
Biol 373: Vertebrate Zoology (3)
Biol 375: Invertebrate Zoology (4)

16 hours from the following:

Geog 121, 121L: Physical Geography and Lab (4)
Geog 234, 234L: Introduction to Global Climate and Lab (4)
Geol 101, 101L: Introduction to Geology and Lab (4)
Geol 102, 102L: The Earth Through Time and Lab (4)
Phys 223, 223L: Introduction to Astronomy and Lab (4)

B.S.ED. WITH COMPOSITE MAJOR IN SOCIAL SCIENCE

Required 125 hours, including:

I. General Education Requirements, see pages 27-30.

II. The College of Education and Human Development, see page 44.

III. The Following Curriculum:

Anth 171: Introduction to Cultural Anthropology (3)
Econ 105: Elements of Economics (3)
Econ 420: Economics Education (3)
Geog 161: World Regional Geography (3)
Geog 319: Geography for Teachers (2)
Hist 101: Western Civilization to 1500 (3)
Hist 102: Western Civilization since 1500 (3)
Hist 103: United States to 1877 (3)
Hist 104: United States since 1877 (3)
PSCI 101: American Government I (3)
PSCI Electives (3)

Soc 101: Introduction to Sociology (3)
An area of concentration from below (12-18)

All courses to be selected with approval of faculty advisers.

Anthropology 12 hours.

Economics 12 hours.

Geography (Human or Cultural) 13 hours.

World History 12 hours.

American History 12 hours.

Political Science 12 hours.

Psychology: minimum of 18 hours to be determined by Psychology Department.

Sociology 12 hours.

Secondary Education

Secondary Education Certification Preparation Sequence

Course Sequence (20 credits minimum):

Pre-admission:

T&L 200: Exploring Teaching (2)
T&L 286: Field Experience (1)

Admission to the Center for Teaching and Learning is required for enrollment in all of the following courses:

T&L 300: Curriculum Development and Instruction (3)
T&L 390: Elective Special Interest Topics (3)
T&L 350: Development and Education of the Adolescent (3)
T&L 386: Field Experience, elective (1)
T&L 400: Methods and Materials (3)
T&L 433: Multicultural Education (3)
T&L 520: Introduction to Indian Studies (3)
T&L 460: Microteaching (2)
T&L 486: Field Experience (2)
T&L 495: Elective: Independent Study/Secondary Education (1)
T&L 487: Student Teaching (10-16)

*To be accepted for student teaching, applicants must have a 2.75 GPA in their major and a 2.50 GPA overall in all course work completed up to the time of application.

Special Education

MINOR IN SPECIAL EDUCATION (20 CREDITS) OR AREA OF CONCENTRATION (15 CREDITS)

The following four courses are required for an Area of Concentration or Minor and should come before any subsequent courses:

*EDL 315: Introduction to the Exceptional Student (3)
*EDL 316: Introduction to the Emotionally Disturbed Child (2)
*EDL 317: Introduction to Mentally Retarded (2)
*EDL 318: Introduction to Learning Disabilities (2)

For the Area of Concentration, select a minimum of 6 credits from the following courses:

*EDL 486: Field Experience in Special Education (1)
*EDL 498: ST: Assistive Technology (1)
*EDL 499: ST: Sign Language (2)
*EDH 529: Special Education Law (3)
*T&L 552: Inclusive Methods (3)
*T&L 553: Collaborative Relationships (2)
*T&L 578: Behavior Management for Special Needs Students (2)

*Starred courses are required for a credential in Special Education.

Additional courses may be eligible for inclusion in the Area of Concentration or Minor, pending approval of Special Education Faculty.

NOTE: In order to obtain teaching credentials in the areas of educational strategist, learning disabilities, emotional disturbance, educable mentally handicapped, or trainable mentally handicapped, students will need to complete additional coursework. See the graduate program on pg. 196 for further information.

Courses:

209. Exploring Teaching, 2 credits. Co-requisite: T&L 286. An opportunity for the introductory level student to reflect on the foundations of education while examining his or her assumptions about teaching and schooling. This course is organized around three questions: What does it mean to teach? What do teachers need to know? and, What do students learn in school? In order to clarify and test the seriousness of a commitment to prepare for teaching, enrollment in a one credit field experience is required. FS

252. Child Development, 3 credits. Study of the growth and developmental process through adolescence. A basis for understanding basic needs of the normal child and means of meeting them in the child’s home and community environment. FS
286. Field Experience. 1 credit. Co-requisite: T&L 215. Supervised tutorial or apprentice teaching experience in an early childhood, K-12 classroom, university or community setting approved by the program area. SU grading. F-S.

300. Literacy Development and Instruction. 3 credits. Prerequisites T&L 200, 286. A general curriculum development and instruction course designed for the undergraduate pre-service teacher. It will focus on acquiring, the undergraduate with (1) an operational approach 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.

301. Center Seminar. 1-3 credits each semester. Required S-U grading. Small group seminars under the leadership of an instructor or team of instructors who serve as advisers for seminar students. Students have the opportunity to discuss, experiment, explore ideas, techniques, and concepts related to teacher preparation, identify and clarify personal and professional needs, and to integrate their learning experiences.

310. Introduction to Early Childhood Education. 3 credits. Corequisite: T&L 417 and 418. An overview of the early childhood education field, including an introduction to its historical roots; current theories, program models and issues; curriculum development; and typical and atypical development of young children. F-S.

311. Cognitive, Social, and Emotional Development of Young Children. 3 credits. This course acquaints the student with a variety of ways of observing, recording, and analyzing the behavior and development of young children. The course will focus on such things as naturalistic observations, what can be learned from the language of children and what can be learned from art of young children. F-S.

313. Young Children’s Language and Thought. 3 credits. Prerequisite: Elementary or Early Childhood major. This course examines both typical and atypical development of language and thought in children 0-3 as a basis for understanding and working with young children in educational settings. F-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. Education of Mentally Handicapped Students. 3 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 history and the characteristics affecting individuals with learning disabilities. The various instructional approaches and service delivery models will also be explored. F-S.

319. Internship in Teaching and Learning. 3 credits. An introduction to 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, to explore children’s literature, and to participate in role-playing, simulations, and peer teaching. F-S.

350. Development and Education of the Adolescent. 3 credits. Prerequisites T&L 215, 286. A comprehensive examination of the characteristics and behavior of the early adolescent student with implications for curriculum and instruction in the junior high and high school. Topics covered will be the transition from childhood to adolescence, including cognitive development, self-concept, physiological changes, social needs and values, and stresses of adolescence. 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 215, 286. Supervised tutorial or apprentice teaching experience in an early childhood, K-12 classroom, university or community setting approved by the program area. Optional. SU grading. F-S.

390. Special Topics. 2 credits. Prerequisites T&L 215, 186. (May be repeated.) F-S.

400. Apprentice Teaching Experience. 3 credits. Various teaching methods and strategies and the materials used in teaching in a subject area. Some offered F only; some S only. See advisor. (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 advisor.) F-S.

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 class-room are investigated. F-S.

410. Introduction to Language Arts (TEAM). 3 credits. Corequisite with the other TEAM classes. This is the introductory course in methods of teaching reading and language arts. This course addresses the foundations of literacy learning and how to teach elementary age children to read. Focus is on developmentally appropriate practice. This is part of a block of courses designated as TEAM. F-S.

411. Primary Reading/Language Arts. 2 credits. Pre or corequisite: T&L 410. This course investigates the reading process, the developmental nature of literacy learning, and current instruction and instructional practices associated with teaching reading and writing in the primary grades. F-S.

412. Intermediate Language Arts. 2 credits. Pre or corequisite: T&L 410. This course addresses the literacy processes of the intermediate age student (grades 4-6) and current methods for instruction. The content includes methods for using literature study, and writing in the intermediate grades. F-S.

413. Corrective Reading. 2 credits. Pre or corequisite: T&L 410. 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, miscue 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. 1 credit. Corequisite with T&L 413. This is the practicum for Corrective Reading. The students in this practicum evaluate, plan for and teach children who are having difficulty with reading and 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. F-S.

416. Functional Curriculum for Students with Moderate Mental Handicaps. 2 credits. A comprehensive training in nonverbal behavior-change procedures for use in schools. In addition, ecological curriculum development and teaching methods for use in natural environments are offered. Curriculum development and methods in the areas of domestic living, self-care, social skills, sexuality and leisure are stressed. F-S.

418. Microcomputers, Technology and Adaptive Access for Handicapped Individuals. 2 credits. Participation in this course presupposes basic computer literacy, basic professional knowledge and skills in special education and hands-on experiences with handicapped individuals. Therefore, the course should be taken immediately prior to student teaching. The concept and practice of adaptive access will be developed through exploration of: applications of technology with handicapped individuals; augmentive communication; microcomputer access and applications; adaptations of commercially produced software; peripherals and single-switch mechanisms; adaptive equipment; positioning and handling; assessment of individuals’ access needs; and parent involvement in adaptive access. S.

419. Curricula and Materials in Special Education. 3 credits. May be taken concurrently with CTL 417 and 418. A laboratory course for the development of curricu-lum and materials to meet the needs of special pupils. F-S.

428. Writing in the Elementary School (TEAM). 2 credits. Prerequisite: admis-sion to Teaching and Learning, Corequisite with other TEAM classes. This course explores the developmental and integrative nature of the writing process and how to teach children to write. The students are given opportunities to be actively involved in writing themselves. F-S.

429. Transition to Adult Life. 3 credits. Systematic methods and curriculum which encourage successful adult life in persons with disabilities. Subject matter includes: determining career opportunities, the attributes of successful adults, career development, and the operation of cooperating agencies and programs. Special assessment and teaching methods from the vocational domain are covered. F-S.

429A. Education of the Gifted/Talented. 2 credits. Methods and programs for encouraging and helping the more able student get the most from their school experiences. F-S.

429B. Assessment Program 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.

429C. Introduction to Children’s Literature. 3 credits. A survey of children’s litera-ture including the application of established literary criteria to imaginative writing and biography and methods of meeting needs and interests of students through literature. F-S.

429D. Young Adult Literature. 3 credits. Discussion and critical evaluation of contemporary and modern literature, both adolescent and adult, which is of interest to young adults, with an emphasis on fiction, drama, poetry, essays, and biographies. On demand. F-S.

430. Social Studies in the Elementary School (TEAM). 3 credits. To understand and analyze the different modes of thinking in an elementary school, K-12 classroom, university or community setting approved by the program area. Optional. SU grading. 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. F-S.

432. Classroom Management. 3 credits. The purpose of this class is to study fac-tors that influence classroom behavior and examine a variety of techniques that can be used in planning for positive classroom management. This course views classroom management from a humanistic position 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. This class takes an anthropological view of multicultural education. It will help students better understand students in culturally 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 investi-gate the dynamics of learning. The course will focus on ideas, research findings, issues and theories, as well as evaluation of motivation, self-concept, socio-cultural concerns, group dynamics, teacher expectations, and other relevant issues. The focus is on the understanding, meaning, and experiences involved in growth, teaching, and learning.
Mathematics

440. Math in the Elementary School (TEAM). 2 credits. TEAM Math is the required mathematics methods course for all undergraduate elementary education majors. Students explore how to facilitate the 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,S.

441. Strategies of Teaching Math. 2 credits. Strategies for Teaching Math is an elective mathematics methods course that focuses on a variety of teaching strategies for the K-8 classroom including: technology (computers and calculators) in mathematics, cooperative learning, and integrating other curriculum areas with mathematics. 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 kindergarten through the third grade. Topics for teaching mathematics include: planning and organizing a developmentally appropriate classroom; teaching in a language-rich environment; incorporating children’s literature, poetry, and songs; facilitating communication through talking; listening, and writing; supporting children’s authoring of ideas; and encouraging a thinking environment where children view themselves as mathematicians. S.

444. Math for Intermediate Grades. 2 credits. Math for Intermediate Grades is an elective course that focuses on curriculum and methods for teaching mathematics in grades four 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.

451. Methods and Materials: Pre-Kindergarten. 3 credits. Pre or Corequisites: CTL 310, 313, 314: 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.

452. Developing Personal Teaching Styles. 1 credit. Prerequisite: Departmental permission. Corequisites: CTL 487, 451B. A tutorial, taken in conjunction with pre-kindergarten student teaching, in which personal styles of teaching are identified and developed in a manner conducive to exemplary practice in early childhood educational settings. S-U grading only. F-S.

453. Methods and Materials: Kindergarten. 2 credits. Prerequisite: CTL 310, 312, 313, 314: Exploration of curriculum, methods, and materials for use in kindergarten settings. S.

454. Organization and Leadership in Early Childhood Education. 2 credits. Prerequisite: Senior standing, graduate, or permission of the instructor. An investigation of patterns of administration, curriculum organization, spatial resources, and staffing in those early childhood settings serving children 0-8 years old. Topics will also include federal and state laws and building trends in preschool to lower primary educational patterns in the classroom, community, and nation. S-E.

455. Comparative Approaches to the Education of Young Children. 3 credits. Prerequisite: CTL 310: A review and comparison of various approaches to the education of young children. Includes: traditional nursery school, Montessori, French, Nido, and other models. Includes: traditional nursery school, Montessori, French, Nido, and other models. S-U grading only. F-S.

456. Pre-Kindergarten Seminar. 2 credits. Prerequisite: CTL 451A, departmental permission. Corequisites: CTL 487, 451B. Taken in conjunction with pre-kindergarten student teaching. This seminar continues the exploration of curriculum, methods, and materials issues as they are presented in the particulars of the student teaching experience. F-S.

457. Introduction to Early Childhood Family Education. 1 credit. This course provides a student with an introduction to the philosophy and practice of early childhood family education (ECFE) programs. The course material will help the student recognize the role of early childhood family education in the entire preschool to 12th grade educational continuum. The course provides the student with an overview of the combined role of early childhood education and parent education in a public school setting. F-S.

460. Microteaching. 2 credits. Prerequisites: T&L 200, 286, 300. The focus of this course is on the educational theories learned in the foundational courses in literacy through peer teaching, group interaction, video-taped presentation, portfolio evaluations, and other activities. Students should take this course the semester before student teaching. F-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 environmental education topics such as erosion, plate tectonics, water quality, and pollution in general. Effective teaching strategies are also emphasized. S-U.

486. Field Experience. 1-4 credits. (Repeatable to 16). Prerequisite: Permission of program chair. Supervised tutorial or apprentice teaching experience in an early childhood, K-12 classroom, university, or community setting approved by the program area. SU 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 director. Provides student 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. SU grading. F-S.

493. 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 in Early Childhood Education. 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 can continue to pursue subject matter covered in courses in greater depth. S.

498. Special Projects. 1-8 credits. Course number reserved for committee approved proposals, independent study, special colloquia, or experimental courses.

Theatre Arts

G. Gillette (Acting Chair), Cutler, Engle, and Jacobsen

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.

The Department of Theatre Arts in the College of Fine Arts and Communication at the University of North Dakota is the only department in any institution of higher learning in the State of North Dakota which is dedicated exclusively to the theatre arts discipline. 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 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 Burtenshaw Theatre which provide broad practical experience for the students in theatre arts. The Burtenshaw 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.

During the summer, the department sponsors “Shakespeare in My Park,” a company including faculty and students that tours a Shakespeare play to community parks throughout the region. The department also sponsors a touring group called Suitcase Shakespeare, a company of student actors performing selected scenes and soliloquies for regional high schools. Stipends and academic credit are available for both “Shakespeare in My Park” and Suitcase Shakespeare.

The facilities of the Department are located in the Burtenshaw Theatre and in adjacent Chandler Hall. In addition to the fully-equipped, 365 seat, proscenium-stage theatre in the Burtenshaw facility, there are a set-construction shop, costume shop, and the 180-seat Studio Theatre. The Chandler Hall facilities include: a dance studio, classroom and rehearsal spaces, a computer design studio and shops, and office and storage spaces.
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 Fine Arts and Communication

#### B.F.A. WITH A MAJOR IN THEATRE ARTS

Required 125 hours including:

I. General Education Requirements, see pages 27-30.

II. College of Fine Arts and Communication Requirements (These requirements are satisfied through specific requirements within the BFA curriculum in III. B.).

III. The Following Curriculum:

A. Core I (courses normally taken during the first two years of study)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA 122</td>
<td>Makeup for Theatre and Television</td>
<td>1</td>
</tr>
<tr>
<td>TA 130</td>
<td>The Art and Craft of Theatre</td>
<td>3</td>
</tr>
<tr>
<td>*TA 200</td>
<td>Rehearsal and Performance</td>
<td>3</td>
</tr>
<tr>
<td>TA 225</td>
<td>Stagecrafts</td>
<td>3</td>
</tr>
<tr>
<td>TA 256</td>
<td>Intro to Design</td>
<td>3</td>
</tr>
<tr>
<td>TA 227</td>
<td>Acting I</td>
<td>3</td>
</tr>
<tr>
<td>TA 250</td>
<td>Readings in Dramatic Literature</td>
<td>3</td>
</tr>
</tbody>
</table>

*B* at least one hour of TA 200 must be for technical theatre involvement.

B. Core II (courses normally taken during the last two years of study)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>TA 300</td>
<td>Play Direction I</td>
<td>3</td>
</tr>
<tr>
<td>TA 314</td>
<td>Vocal Performance Techniques</td>
<td>3</td>
</tr>
<tr>
<td>TA 423</td>
<td>History of the Theatre: Classical, Medieval, Renaissance</td>
<td>3</td>
</tr>
<tr>
<td>TA 424</td>
<td>History of the Theatre: 17th Century to the Present</td>
<td>3</td>
</tr>
<tr>
<td>TA 425</td>
<td>Contemporary Theatre</td>
<td>3</td>
</tr>
<tr>
<td>Music Courses in History/Theory</td>
<td>3</td>
<td></td>
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<tr>
<td>VA Courses in History/Theory</td>
<td>3</td>
<td></td>
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<tr>
<td>Music or VA Courses in Applied Art</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TA/Engl Additional courses in Dramatic Literature (may include TA 330)</td>
<td>6</td>
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</tbody>
</table>

C. From one of the following tracks:

1. Performance
   a. Required
      - TA 140/140L Stage Movement | 2
      - TA 318, 320, 321 Studio | 8
      - TA 380, 480 Theatre Practicum | 3
      - TA 328 Acting II | 3
      - TA 402 Acting III | 3
   b. Electives*
      - TA 222 Advanced Makeup | 1
      - TA 229 Creative Dramatics | 3
      - TA 329 Children’s Theatre | 3
      - TA 339 Production Design | 3
      - TA 404 Acting for the Music Theatre | 3
      - TA 411 Audition Techniques | 1
      - TA 425 Play Direction II | 3
      - TA 490 Senior Project | 4

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>TA 326</td>
<td>Lighting for Stage I</td>
<td>2</td>
</tr>
<tr>
<td>TA 339</td>
<td>Production Design</td>
<td>3</td>
</tr>
<tr>
<td>TA 426</td>
<td>Scene Design for the Stage</td>
<td>3</td>
</tr>
<tr>
<td>TA 427</td>
<td>Costume Design</td>
<td>3</td>
</tr>
<tr>
<td>TA 481</td>
<td>Theatre Practicum</td>
<td>7</td>
</tr>
<tr>
<td>TA 490</td>
<td>Senior Project</td>
<td>4</td>
</tr>
</tbody>
</table>

2. Design and Technical Theatre
   a. Required
      - TA 326 Lighting for Stage I | 2
      - TA 339 Production Design | 3
      - TA 426 Scene Design for the Stage | 3
      - TA 427 Costume Design | 3
      - TA 481 Theatre Practicum | 7
      - TA 490 Senior Project | 4
   b. Electives*
      - TA 222 Advanced Makeup | 1
      - TA 325 Scene Craft | 3
      - TA 336 Lighting for Stage II | 2
      - TA 426 Scene Design for the Stage | 3
      - TA 427 Costume Design | 3
      - TA 481 Theatre Practicum | 7
      - TA 490 Senior Project | 4

   *Courses to be approved by advisor

3. Relevant special topics courses in Theatre Arts
   - May also include two additional hours of study (100-290, 390-400)
   - Up to 3 additional credits of relevant applied arts courses
     (such as HPER, Communications, Music)

4. Relevant Special Topics Courses
   - *Courses to be approved by advisor

#### B.A. WITH A MAJOR IN THEATRE ARTS

Required 125 hours including:

I. General Education Requirements, see pages 27-30.

II. Level II proficiency in a foreign language.

III. 8 additional hours in the same or a second foreign language or 8 additional hours in a cognate area: courses to be approved by advisor (suggested cognate topics include: Women’s Studies, Minority Studies, Anthropology, English, Psychology, Computer Science, Indian Studies, Peace Studies, Music, Communication, Visual Arts, etc.)

IV. The following curriculum:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>TA 130</td>
<td>The Art and Craft of Theatre</td>
<td>3</td>
</tr>
<tr>
<td>TA 200</td>
<td>Rehearsal &amp; Performance</td>
<td>2</td>
</tr>
<tr>
<td>TA 225</td>
<td>Stagecrafts</td>
<td>3</td>
</tr>
<tr>
<td>TA 226</td>
<td>Intro to Design</td>
<td>3</td>
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<tr>
<td>TA 227</td>
<td>Acting I</td>
<td>3</td>
</tr>
<tr>
<td>TA 250</td>
<td>Readings in Dramatic Literature</td>
<td>3</td>
</tr>
<tr>
<td>TA 300</td>
<td>Play Direction I</td>
<td>3</td>
</tr>
<tr>
<td>TA 330</td>
<td>Contemporary Theatre</td>
<td>3</td>
</tr>
<tr>
<td>TA 423</td>
<td>History of Theatre: Classical Medieval &amp; Renaissance</td>
<td>3</td>
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<tr>
<td>TA 424</td>
<td>History of Theatre: 17th Century to the Present</td>
<td>3</td>
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<tr>
<td>TA 425</td>
<td>Theatrical Practicum</td>
<td>3</td>
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<tr>
<td>TA 498</td>
<td>Playwriting</td>
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<tr>
<th>Course</th>
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<tr>
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<td>TA 222</td>
<td>Advanced Makeup</td>
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<td>TA 223</td>
<td>Beginning Oral Interpretation</td>
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<td>TA 229</td>
<td>Creative Dramatics</td>
<td>3</td>
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<td>TA 325</td>
<td>Scene Craft</td>
<td>3</td>
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<tr>
<td>TA 326</td>
<td>Lighting for Stage I</td>
<td>2</td>
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<tr>
<td>TA 328</td>
<td>Acting II</td>
<td>3</td>
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<tr>
<td>TA 329</td>
<td>Children’s Theatre</td>
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<td>TA 425</td>
<td>Play Direction II</td>
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<td>TA 426</td>
<td>Scene Design for the Stage</td>
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<tr>
<td>TA 427</td>
<td>Costume Design</td>
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<tbody>
<tr>
<td>TA 140/140L</td>
<td>Stage Movement</td>
<td>2</td>
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<tr>
<td>TA 318, 320, 321</td>
<td>Studio</td>
<td>8</td>
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<td>TA 380, 480</td>
<td>Theatre Practicum</td>
<td>3</td>
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<td>TA 328, 329, 402</td>
<td>Acting I, II, III</td>
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<td>TA 339, 404</td>
<td>Production Design, Acting for the Music Theatre</td>
<td>3</td>
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<tr>
<td>TA 411</td>
<td>Audition Techniques</td>
<td>1</td>
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<td>TA 425</td>
<td>Play Direction II</td>
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MINOR IN THEATRE ARTS

Required 23 hours, including:

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<tr>
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<tr>
<td>TA 300</td>
<td>Play Direction I</td>
<td>3</td>
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<tr>
<td>TA 330</td>
<td>Contemporary Theatre</td>
<td>3</td>
</tr>
<tr>
<td>TA 423</td>
<td>History of Theatre</td>
<td>3</td>
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<tr>
<td>TA 424</td>
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<td>TA 328</td>
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<td>3</td>
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*Courses to be approved by advisor

150
Courses

121. 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 at least one performance. F,S

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 participatory roles. For prospective majors and minors. F

140. Stage Movement. 2 credits. Co-requisite: TA 140L. A course which explores the use of the body as an instrument of the actor. Techniques of centering, coordination, relaxation, energization. Basic principles of stage movement are explored through improvisational games, the linking of breath, speech and text to movement, and the implementation of other relevant acting tools. Frequent use of guest lecturers and guest artists. F,S

140L. Stage Movement Laboratory. 0 credits. Co-requisite TA 140. A laboratory to accompany TA 140. Stage Movement. Performance and practice in exercises learned in TA 140.

180. Theatre Performance Studio. 1 credit repeatable to 2. A studio setting wherein students will explore movement, voice, improvisation, auditioning, stage combat, and the implementation of other relevant acting tools. Frequent use of guest lecturers and guest artists. F,S

200. Rehearsal and Performance. 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.

222. Advanced Makeup. 1 credit. Prerequisite: TA 122 or consent of instructor. A continuation of 122 with emphasis on various prosthetic techniques, mask building, and non-realistic styles.

223. Oral Interpretation. 3 credits. The study of literature for performance with emphasis on written and verbal analysis of oratory, prose, poetry, drama, and group performance. On demand.

225. Stagecraft. 3 credits. Designed to familiarize the student with crafts and techniques of production: scenery construction, costume construction, painting, lighting equipment, sound techniques. Practical experience, shop procedures and safety practices are tied to lab experience in University productions.

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

227. Acting I. 3 credits. Basic principles of acting with emphasis on movement; basic character development through improvisation and script. F,S

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.

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

280. Theatre Performance Studio. 1 credit, repeatable to 2. Prerequisite TA 180 and admittance to BFA program. Continuation of TA 180. F,S

300. Play Direction I. 3 credits. Prerequisites: TA 227 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,S

314. Vocal Performance Techniques. 3 credits. Training in vocal and articulatory techniques with emphasis on vocal exercises and performance techniques. F,S

325. Scene Craft. 3 credits. Specialized construction and rigging of scenery, advanced technology applications to the stage. Drafting, designing and construction of sets for University productions. F

326. Lighting for Stage I. 2 credits. Prerequisite: TA 225 or consent of instructor. The principles, mechanics and design of stage and television lighting; its relationship to set, makeup and costume design; and laboratory participation in University productions. F,S

328. Acting II. 3 credits. Prerequisite: TA 227 or consent of instructor. Application of skills from Acting I to contemporary and modern realist scripts that make advanced demands of the actor. F

329. Children's Theatre. 3 credits. Repeatable up to 6 hours. The production of theatre for children; the history of children's theatre; selection and analysis of scripts; problems of directing and acting; laboratory work producing plays for children. S

330. Contemporary Theatre. 3 credits. Readings in dramatic literature from 1880s to contemporary times. Strong emphasis on written and verbal analysis of current dramatic techniques beyond realism. S

336. Lighting for Stage II. 2 credits. Prerequisite: TA 225, 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,S

337. 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.

339. Production Design. 3 credits. Prerequisites: TA 130 and 225, and 300, or consent of instructor. The development of the entire theatrical event, from conception to closing, with particular attention to the collaboration of various artists, craftspeople, and managers. S

350. Dramatic Production and Criticism. 3 credits. Prerequisites: TA 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

380. Theatre Performance Studies. 1 credit, repeatable to 2. Prerequisite TA 280. Continuation of TA 280. F,S

402. Acting III. 3 credits. Prerequisite: TA 328. Intensive work in individual and ensemble techniques with study and practice of actor research methods, movement and characterization methods needed for a variety of classical or highly stylized texts. S

404. Acting for the Music Theatre. 3 credits. Prerequisite: TA 227, or consent of instructor. Appreciation of and performance techniques for musical theatre including: voice and movement work, acting, and staging. S

411. Audition Techniques. 1 credit. Prerequisite: 6 credits in Acting/Performance courses. Selection, rehearsal, and performance of theatrical material for auditions. F,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 Issues in Drama, Polish Theatre and Drama, Improvisation, Scene Painting, and others. On demand.

422. American Theatre History. 3 credits. The development of Theatre Arts in America from Colonial times to the present. On demand.

423. History of the Theatre: Classical Medieval and Renaissance. 3 credits. The theatre in performance. The origins of theatrical forms and their relationships to acting style, physical theatre and audience with the cultural environment. F

424. History of the Theatre: Seventeenth Century to the Present. 3 credits. A continuation of topics covered in TA 423 beginning with the Seventeenth Century and continuing to the present. Student need not take TA 423 prior to enrolling in TA 424.

425. Play Direction II. 3 credits. Prerequisite: TA 300 or consent of instructor. A continuation of TA 300 with emphasis on contemporary theories, analysis, research, conceptualization, and implementation. Laboratory experience. S

426. Scene Design for the Stage. 3 credits. Repeatable up to 6 hours. The analysis, research, and conceptualization of the physical context of theatre productions. Emphasis on individual creative projects. F

427. Costume Design. 3 credits. Prerequisites: TA 225 and 226, or equivalent. Repeatable up to 6 hours. Elements of design, and styles of design applied to the visual creation of a dramatic character. S


481. Theatre Practicum. 1-2 credits. Repeatable to 8 hours. Projects in all areas of theatre and interpretation in a supervisory capacity. Specific assignments in production/planning with faculty approval. F,S

490. Senior Project. 4 credits. Individual work in an approved area. F,S

498. Playwriting. 3 credits. Repeatable up to 6 hours. Prerequisites: Sufficient background in theatrical arts and creative writing and consent of instructor. The playwright's problems as revealed through practice of writing plays; experimental productions of the student's creative work whenever possible. F,S

Visual Arts (VA)

J. McElroy-Edwards (Chair), Auyong, Fundingsland, Luber, McCleery, Meyers, Miller, Monsenbroten, Paulsen, and Schafer

The Department of Visual Arts 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 of study are: two-dimensional (drawing, painting, photography, printmaking), three-dimensional (ceramics, sculpture, fibers, metalsmithing), history of visual arts, and visual arts education. 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 Edmund A. Hughes Fine Arts Center provides specialized studios and opportunities for work in the various visual arts media.

The Department of Visual Arts in the College of Fine Arts and Communication of the University is an accredited institutional member of the National Association of Schools of Art and Design.
College of Fine Arts and Communication

B.F.A. WITH MAJOR IN VISUAL ARTS

The Bachelor of Fine Arts program in Visual Arts 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 MFA, 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 Visual Arts 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 committee consisting of three Visual Arts faculty members. Each student’s portfolio will be reviewed annually by Visual Arts 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 hours including:

I. General Education Requirements, see pages 27-30.

II. College of Fine Arts and Communication Requirements, see page 49 including:

Electives in Fine Arts Disciplines (other than Visual Arts) .......................... (6)

III. The Following Curriculum:

All BFA degree majors in visual arts have minimum requirement of 15 credits in History of Visual Arts courses and 74 credits in Visual Arts Practicum (studio) courses. Distribution of those credits is as follows:

Core Requirements:

- VA 108 ........................................ Hand & Power Tool Safety .................. (1)
- VA 130, 131 ................................. Drawing I, II .................................. (6)
- VA 173, 174 ................................. Design I: Two-dimensional; Design II: Three-dimensional ..... (6)
- VA 210 .......................................... Art History Survey: Paleolithic to Renaissance ...(3)
- VA 211 .......................................... Art History Survey: Renaissance to Present ...(3)
- VA 230 .......................................... Figure Drawing I ................................. (3)

and 18 credits from:

- VA 200, 201 ................................. Sculpture I, II ...................................(3, 3)
- VA 204, 205 ................................. Jewellerymaking I, II .......................... (3, 3)
- VA 220, 221 ................................. Painting I, II ..................................... (3, 3)
- VA 231 .......................................... Figure Drawing II ................................ (3)
- VA 240 .......................................... Printmaking I: Intaglio ......................... (3)
- VA 241 .......................................... Printmaking I: Relief and Serigraphy .... (3)
- VA 251 .......................................... Ceramics I ........................................ (3)
- VA 253 .......................................... Ceramics II: Throwing ....................... (3)
- VA 260 .......................................... Slide Photography .............................. (3)
- VA 261 .......................................... Color Printing ................................ (3)
- VA 274 .......................................... Calligraphy ..................................... (3)
- VA 276 .......................................... Surface Design on Fabric ............... (3)
- VA 277 .......................................... Fibers .......................................... (3)

Before advancement to upper-division status, all B.F.A. candidates must participate in review and evaluation by the Visual Arts Faculty.

Major Area Courses:

At least 24 credits must be completed (including 200-level courses) in one of the following media areas:

Ceramics

- VA 211 ................................. Art History Survey: Renaissance to Present .......(3)
- VA 230 .......................................... Figure Drawing I ................................. (3)
- VA 240 .......................................... Printmaking I: Intaglio ......................... (3)

Fibers

- VA 232, 323 ................................. Painting III, IV ...................................(3, 3)

Photography

- VA 340 .......................................... Printmaking II: Lithography ................. (3)
- VA 341 .......................................... Printmaking III: Plate & Color Lithography .... (3)
- VA 342, 343 ................................. Printmaking II, III: Intaglio ................. (3, 3)
- VA 344, 345 ................................. Printmaking II, III: Serigraphy ............... (3, 3)
- VA 351 .......................................... Ceramics II: Sculpture ...................... (3)

Small Sculpture

- VA 353 .......................................... Ceramics III: Throwing ..................... (3)
- VA 355 .......................................... Clay & Glasses ................................ (3)
- VA 361 .......................................... Concepts in Visual Arts Education .... (2)

Upper-level students are required to complete a MINIMUM of 38 credits in courses selected from the following list:

- VA 365, 366 ................................. Photography Studio I, II .......................... (3, 3)
- VA 371, 372, 373 .......................... Fibers II, III, IV ................................. (3, 3, 3)
- VA 375 .......................................... Color Theory .................................. (3)
- VA 391a, 391b .............................. Special Topics .................................. (1-4)
- VA 410 .......................................... Art History: Selected Topics ............... (1-4)
- VA 412 .......................................... Art History: 20th Century (to 1930s) .... (3)
- VA 413 .......................................... Art History: 20th Century (1930s to 1960s) .(3)
- VA 414 .......................................... Art History: 20th Century (1960 to present) .(2)
- VA 415 .......................................... Art History: Museum Internship .......... (1-3)
- VA 416 .......................................... Art History: Italian Renaissance .......... (3)
- VA 417 .......................................... Art History: Baroque ......................... (3)
- VA 419 .......................................... Art History: 19th Century ................ (3)
- VA 490 .......................................... Special Projects/Independent Research .... (1-12)

BFA in Visual Arts with Secondary Teacher Certification: Students who wish to become secondary art teachers must fulfill the requirements for certification in the Center for Teaching and Learning as described on p. 148. This must include CTL 490, Methods and Materials in Secondary Art Education.

All B.F.A. candidates are required to be represented in the BFA Group Exhibition with the approval of their faculty advisor. Electives in disciplines other than visual arts with not more than 9 credits in other fine arts disciplines; these electives may be employed to fulfill the requirement for teacher certification.

B.A. WITH MAJOR IN VISUAL ARTS

Required 125 hours including:

I. General Education Requirements, see pages 27-30.

II. 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:

- VA 108 .......................................... Hand & Power Tool Safety ................. (1)
- VA 130, 131 ................................. Drawing I, II .................................. (6)
- VA 173, 174 ................................. Design I: Two-dimensional; Design II: Three-dimensional ..... (6)
- VA 210 .......................................... Art History Survey: Paleolithic to Renaissance ...(3)
- VA 211 .......................................... Art History Survey: Renaissance to Present ...(3)
- VA 215 .......................................... Art History Survey: Renaissance to Present .... (3)

Plus at least 9 credits in the following:

- VA 200, 201 ................................. Sculpture I, II ...................................(3, 3)
- VA 204, 205 ................................. Jewellerymaking I, II .......................... (3, 3)
- VA 220, 221 ................................. Painting I, II ..................................... (3, 3)
- VA 230, 231 ................................. Figure Drawing I, II ................................ (3, 3)
- VA 240 .......................................... Printmaking I: Intaglio ......................... (3)
- VA 241 .......................................... Printmaking I: Relief and Serigraphy .... (3)
- VA 251 .......................................... Ceramics I ........................................ (3)
- VA 253 .......................................... Ceramics II: Throwing ....................... (3)
- VA 260 .......................................... Slide Photography .............................. (3)
- VA 261 .......................................... Color Printing ................................ (3)
- VA 274 .......................................... Calligraphy ..................................... (3)
- VA 276 .......................................... Surface Design on Fabric ............... (3)
- VA 277 .......................................... Fibers .......................................... (3)

Upper-level students are required to complete a MINIMUM of 20 credits in courses selected from the following list:

- VA 302, 303 ..................................... Sculpture III, IV ................................ (3, 3)
- VA 322, 323 ..................................... Painting III, IV ................................ (3, 3)
- VA 332, 333 ..................................... Figure Drawing III, IV ......................... (3, 3)
- VA 340 .......................................... Printmaking II: Lithography ................. (3)
- VA 341 .......................................... Printmaking III: Plate & Color Lithography .... (3)
- VA 342, 343 ..................................... Printmaking II, III: Intaglio ................. (3, 3)
- VA 344, 345 ..................................... Printmaking II, III: Serigraphy ............... (3, 3)
- VA 351 .......................................... Ceramics II: Sculpture ...................... (3)
- VA 353 .......................................... Ceramics III: Throwing ..................... (3)
- VA 355 .......................................... Clay & Glasses ................................ (3)
- VA 361 .......................................... Concepts in Visual Arts Education .... (2)
- VA 365, 366 ................................. Photography Studio I, II .......................... (3, 3)
- VA 371, 372, 373 .......................... Fibers II, III, IV ................................. (3, 3, 3)
- VA 375 .......................................... Brush Lettering & Sign Painting .......... (3)
- VA 379 .......................................... Color Theory .................................. (3)
- VA 391a, 391b .............................. Special Topics .................................. (1-4)
- VA 410 .......................................... Art History: Selected Topics ............... (1-4)
- VA 412 .......................................... Art History: 20th Century (to 1930s) .... (3)
- VA 413 .......................................... Art History: 20th Century (1930s to 1960s) .(3)
- VA 414 .......................................... Art History: 20th Century (1960 to present) .(2)
- VA 415 .......................................... Art History: Museum Internship .......... (1-3)
- VA 416 .......................................... Art History: Italian Renaissance .......... (3)
- VA 417 .......................................... Art History: Northern Renaissance .......... (3)
MINOR IN VISUAL ARTS (Studio)

Required 22 hours including:

VA 110. Introduction to Understanding Art. (3)
VA 130, 131. Drawing I, II (6)
VA 173, 174. Design I: Two Dimensional; Design II: Three Dimensional (6)

7 hours from the following: Art History, Ceramics, Drawing, Fibers, Jewelry, Painting, Printmaking, Sculpture, Photography

MINOR IN ART HISTORY

Required 24 hours including:

6 hours of Art History Survey:
VA 210. Art History Survey: Paleolithic to Renaissance. (3)
VA 211. Art History Survey: Renaissance to the Present. (3)

12 hours from any 400 level Art History course.

6 hours from the following studio courses:
VA 100. Introduction to Sculpture. (3)
VA 120. Introduction to Drawing and Color Materials. (3)
VA 173, 174. Design I: Two Dimensional; Design II: Three Dimensional (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 page 146 under the Center for Teaching and Learning.

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. F-S

110. Introduction to the Understanding of Art. 3 credits. 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

130. Design I: Two dimensional. 3 credits. Form, proportion, composition, and perspective covering a wide range of media and subject; experimentation in line and color quality; figure work. F-S

131. Drawing I. 3 credits. Prerequisite: VA 130. A continuation of the skills and concepts developed in Drawing I. F-S

151. Introduction to Ceramics. 3 credits. Introduction for non-majors to basic hand forming processes and glazing techniques. Clay and firing processes are learned through lecture, discussions, demonstrations, and readings. F-S

173. Design I: Two Dimensional. 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

174. Design II: Three Dimensional. 3 credits. Prerequisite: VA 173. Basic concepts of 3-dimensional design as they apply to the fine and applied arts are learned through projects with various media. F-S

200. Sculpture I. 3 credits. Prerequisites: VA 108, 174. 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: VA 200. Continuation of Sculpture I. F-S

204. Jewelrymaking I. 3 credits. A comprehensive laboratory understanding of non-ferrous metals and their manipulation is presented, leading to proficiency for the making of body ornaments and simple containers from sheet. F-S

205. Jewelrymaking II. 3 credits. Prerequisite: VA 204. A continuation of the comprehensive laboratory understanding of non-ferrous metals & their manipulation is presented. Leading to proficiency for the making of body ornaments and simple containers from sheet. F-S

210. Art History Survey: Paleolithic to Renaissance. 3 credits. A survey of western art from paleolithic to the Renaissance. F-S

211. Art History Survey: Renaissance to Present. 3 credits. A survey of western art from Renaissance to the present. S

220. Painting I. 3 credits. Prerequisite: VA 131. 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: VA 220. Continuation of concepts and techniques explored in Painting I. F-S

230. Figure Drawing I. 3 credits. Prerequisite: VA 131. Expressive and analytical drawing of the figure. Work is done in varied media, varied techniques and varied conceptual approaches to help students develop visual expressive skills. F-S

231. Figure Drawing II. 3 credits. Prerequisite: VA 230. 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

251. Ceramics I. 3 credits. 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

252. Ceramics II: Throwing. 3 credits. Prerequisite: VA 151 or 251 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. Slide Photography. 3 credits. A non-darkroom oriented class in slide photography emphasizing the aesthetic design and compositional aspects of this artistic medium. SU grading only. F-S

261. Color Printing. 3 credits. Prerequisite: VA 260 or instructor approval. This beginning course in color printing is designed as a complementary follow up course to Slide Photography. VA 260. SU grading only. 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 illustration. F-S

276. Surface Design on Fabric. 3 credits. Prerequisite: VA 173. Exploration of technical and design possibilities of various surface embellishments on fabric (printed, dyed). Demonstration/lecture/studio work. F-S

277. Fibers I. 3 credits. Prerequisite: VA 173. Samples and finished art projects of student’s design carried out exploring technical and design possibilities of various textile techniques. Demonstration/lecture/studio work. F-S

302. Sculpture III. 3 credits. Prerequisite: VA 201. Continued involvement in advanced sculpture processes and emphasis on personal style development. F-S

303. Sculpture IV. 3 credits. Prerequisite: VA 302. Continuation of Sculpture III. F-S

304. Jewelry and Small Sculpture I. 3 credits. Prerequisite: VA 205 or consent of instructor. Specialized techniques and processes, new and traditional, of metal fabrication ranging from small small-scale to small-scale forms with emphasis on design and craftsmanship. Includes designing, piercing, soldering, bezel setting, forming, forging, wire-pulling, casting, enameling. Incorporation of mixed media encouraged. F-S

305. Jewelry and Small Sculpture II. 3 credits. Prerequisite: VA 304 or consent of instructor. Continuation and expansion of Jewelry and Small Sculpture I, plus bench journal, marketing and exhibition experience. S

306. Jewelry and Small Sculpture III. 3 credits. Prerequisite: VA 305. Expansion of bench techniques and studio production, including advanced design, repair, gem identification and settings, marketing, portfolio and exhibit experience. F-S

307. Jewelry and Small Sculpture IV. 3 credits. Prerequisite: VA 306. Continuation of Jewelry and Small Sculpture III. F-S

322. Painting III. 3 credits. Prerequisite: VA 221. Further development of painting concepts, comprehension and search of various media and styles. The course stresses the focus of one’s attitudes towards developing a more personal visual statement in areas of personal interest. F-S

323. Painting IV. 3 credits. Prerequisite: VA 322. Continuation of Painting III. F-S

324. Figure Drawing III. 3 credits. Prerequisite: VA 231 or consent of instructor. Using the human figure as a basis for teaching and 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: VA 332. Continuation of Figure Drawing III. F-S

337. Cooperative Education. Part-time, fall and spring, 1-3 credits. Repeatable to 3 credits only. Full-time, fall, spring, and summer, 8 credits, not repeatable or interchangeable with part-time. Arranged by mutual agreement among student, Department and employer prior to enrollment. Special permission is required. Regular grading only. F-S

340. Printmaking II: Lithography. 3 credits. Prerequisite: VA 240 or 241. Basic black and white stone lithographic processes. F-S

341. Painting III: Plate color Lithography. 3 credits. Prerequisite: VA 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: VA 240. Intaglio work to include metal and plexiglass plates. Elaboration on the use of techniques, including soft ground, sugar lift, and the double print process. Introduction to multiple color printing and experimental processes. A slide survey of contemporary printmakers. F-S

343. Printmaking III: Intaglio. 3 credits. Prerequisite: VA 342. Continuation of Printmaking II: Intaglio. F-S
344. Printmaking II: Serigraphy, 3 credits. Prerequisite: VA 241. Investigation of screen printing techniques with professional quality, non-toxic materials and a full range of stencil systems including experimental approaches. F,S

345. Printmaking III: Serigraphy, 3 credits. Prerequisite: VA 244. Continuation of Printmaking II: Serigraphy. F,S

351. Ceramics II: Sculpture, 3 credits. Prerequisite: VA 151 or 174 or 251 or consent of instructor. A sculptural approach to clay is explored with emphasis on both representing figurative forms and solving more abstract, conceptual problems. The second semester is an extension of the first with more advanced problems in the same areas. F,S

353. Ceramics III: Throwing, 3 credits. Prerequisite: VA 253. Devoted to more complex problems such as throwing larger pieces, multiple-sectioned forms, sets of forms and lidded pieces. F,S

355. Clay & Glazes, 3 credits. Prerequisite: VA 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

361. Concepts in Visual Arts Education, 2 credits. Lecture, discussion course designed to give an overview of visual arts education, current topics in visual arts education, the relationship of visual arts education to the arts and education, survey of literature in visual arts education; concept approaches to instructing the visual arts grades 6 to 12. S

365. Photography Studio I, 3 credits, repeatable to 6 credits. Prerequisite: VA 261. Refinement of conceptual and formal qualities in silver or nonSilver-process photographic projects using color, black and white or hand coloring techniques. The scope of work and media will be determined by contractual arrangement between student and instructor. F,S

366. Photography Studio II, 3 credits (repeatable to 6 credits). Prerequisite: VA 365 or consent of instructor. Further development of conceptual and formal qualities in silver or nonSilver-process photographic projects in 35mm, medium or large camera formats. The scope of work and media will be determined by contractual arrangement between students and instructor. F,S

371. Fibers II, 3 credits. Prerequisites: VA 173 or 174 and 277. Course work will consist of sample making and sustained projects woven on the loom. Techniques taught include yarn dying. F

372. Fibers III. 3 credits. Prerequisite: VA 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: VA 173 or 174 and 372. This course will deal with textured 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: VA 274. A continuation of Calligraphy, further practical knowledge of the applications of freehand brush lettering, layout techniques, materials involved. F,S

379. Color Theory, 3 credits. Prerequisite: VA 173. Advanced experimentation with color phenomena, light & pigment theory through historical, theoretical and practical approaches. S

391a. Special Topics, 1-4 credits. 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

391b. Special Topics, 1-4 credits. 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

410. Art History: Selected Topics, 1-4 credits. Prerequisite: VA 210,211. Art historical topics outside the regular art history curriculum or specialized subjects as indicated by title of course. May be repeated as title changes. F,S,SS

412. Art History: 20th Century (to 1930s), 3 credits. Prerequisite: VA 210, VA 211. The origins of 20th Century "isms" from the 19th-Century trends through the 1930s in Europe. F

413. Art History: 20th Century (1930s to 1960s), 3 credits. Prerequisites: VA 210, VA 211. A critical view of the artistic proliferation in Europe and the United States from the 1930s to the present. F,S

414. Art History: 20th Century (1960 to present), 3 credits. This course is a continuation of the 20th Century Art History sequence. It will cover Abstract Expressionism through to the emerging artistic trends of the present. F,S

415. Art History: Museum Internship, 1-3 credits. The Museum Intern will work with the instructor and museum staff on assigned exhibitions to research and write a paper and a presentation for the docents and the public. S,F

416. Art History: Italian Renaissance, 3 credits. Prerequisites: VA 210, VA 211. Survey of Italian Renaissance Art and Architecture from 1300-1600. S

417. Art History: Northern Renaissance, 3 credits. Prerequisites: VA 210, VA 211. Survey of Northern Renaissance Art from France, Germany and the Low countries, 1300-1600. F,S

418. Art History: Baroque Art and Architecture, 3 credits. Prerequisites: VA 210, VA 211. Survey of 17th Century Baroque Art and Architecture in Italy, France and Holland. S

419. Art History: 19th Century, 3 credits. Prerequisites: VA 210, VA 211. Survey of 19th Century Art with an emphasis on French painting. S

460. Methods, Materials and Philosophy: Art in the Elementary Classroom, 3 credits. Prerequisites: Sophomore standing in CTL or VA. 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-dimensional and 3-dimensional projects, featuring multi-cultural and disciples-based education. F,S

490. Special Projects/Independent Research, 1-6 credits, no more than 12 in each media. Prerequisite: Permission of instructor or chairperson. Research and creative experiences within a specific area of interest in the Visual Arts with emphasis on refinement of aesthetic applications of techniques and media: Sculpture, History of Visual Arts, Painting, Drawing, Printmaking, Ceramics, Visual Arts Education, Fibers, Mixed Media, Jewelry, Photography. F,S,SS

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 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. 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 Women Studies Program expands our concepts of a well-educated person.

College of Arts and Sciences

MINOR IN WOMEN STUDIES

Twenty hours of courses in Women Studies completed with a GPA of at least 2.0 are required for the minor.

I. Required courses (total hours: 4 to 7):

A&S 222.................Introduction to the Study of Women. .................(3)

A&S 480.................Feminist Theory. ..................................................(3)

II. At least three of the following (total hours: 9):

Engl 357..................Women Writers & Readers (may be repeated once when topics vary).........(3)

Hist 332..................Women in American History to 1865. .................(3)

Hist 333..................Women in American History since 1865..........(3)

Rel 116..................Women and Religion. .............................................(3)

Soc 340..................Sociology of Gender & Sex Roles. .................(3)

III. At least five hours from (total hours: 6):

A&S 498..................Senior Study (credits may be shared with major field). .................(1-4)

EHD 430..................Human Relations. ..................................................(3)

IS 346..................Contemporary Indian Women. .................(3)

Comm 310................Communication and Diversity. .................(3)

Soc 335..................The Family. ...........................................................(3)

Others: Courses in various departments cross-listed each semester in the Time Schedule of Classes.

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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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 1995–96, 379 master's degrees, 3 specialist diplomas, and 40 doctorates were awarded. More than 12,500 master's degrees, 70 specialist's diplomas, and 1600 doctoral degrees have been 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 400 faculty are now members of the Graduate Faculty.

The Graduate Committee is the executive body of the Graduate Faculty. It is composed of the Graduate Dean and twelve elected members, one representative elected from and by the graduate faculties of nine academic area electorates, and three members elected at large from the Graduate Faculty. 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

Jacob Chacko, Ph.D., Business, 1996-99
John Collings, Ph.D., Sciences/Mathematics, 1995-98
Mary Lou Fuller, Ph.D., Education, 1994-97
Susan Henly, Ph.D., Health Sciences, 1996-99
Mark Hoffmann, Ph.D., Member-at-Large, 1994-97
Jeff Holm, Ph.D., Member-at-Large, 1995-98
Sukhvarsh Jerath, Ph.D., Engineering, 1995-98
Cindy Junutunen, Ph.D., Human Resources, 1996-99
Patrick Luber, M.F.A., Fine Arts, 1994-97
Martha Meek, Ph.D., Humanities, 1995-98
Jan Moen, Ph.D., Social Sciences, 1994-97
Tom Owens, Ph.D., Social Sciences, 1996-99
Harvey Knull, Ph.D., Dean (ex officio)

RESEARCH AND SCHOLARSHIP AT UND

The faculty at the University of North Dakota are committed to scholarship and creativity, to new knowledge, and to new technology. Large numbers of high quality creative efforts include publications, presentations, books, exhibitions, and contracts and peer reviewed grants (in excess of $40,000,000).

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 and Applied Research, the Center for Innovation and Business Development, the Center for Rural Health, the Institute for Ecological Studies, 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.

UND and NDSU are also active in the North Dakota Experimental Program to Stimulate Competitive Research (EPSCOR). Since 1986 this program has obtained about $11 million from the NSF and stimulated submission of proposals far in excess of that value. EPSCOR money is expended to enhance research at UND and to build the science infrastructure in the state of North Dakota.
Admission

Those who have earned or will earn a 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
University of North Dakota
P.O. Box 8178
Grand Forks, ND 58202
Phone (701) 777-2945
FAX (701) 777-3619
E-mail: undgrad@mail.und.nodak.edu
Worldwide Web: http://www.und.nodak.edu/dept/grad/index.htm

MINIMUM GENERAL ADMISSION REQUIREMENTS

1. A bachelor’s degree from a recognized college or university (for U.S. degrees, accreditation by one of the six regional accrediting associations).
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 score of at least 550 on the TOEFL (Test of English as a Foreign Language) for all applicants whose native language is not English.
5. Completion of all departmental admission requirements (see the section entitled, “Departmental Programs,” pages 176-228.)

*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 3.5 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 a QUALIFIED admission (see pages 160 & 161).

Please see the Departmental Section for admission requirements in addition to the minimum Graduate School requirements.

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.

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 deadlines:

- Anesthesia Nursing / January 15
- Biology / April 15
- Counseling / February 1
- Counseling Psychology / January 1
- English / March 1
- Family Nurse Practitioner / January 15
- Psychology (all specialties) / February 1
- Social Work / February 1
- Speech/Language Pathology / February 15

NOTE: Applications must be completed and submitted to the Graduate School two weeks prior to departmental deadlines.

INTERNATIONAL STUDENTS

The completed application and all official transcripts or mark sheets with English translations must be received in the Graduate School three months prior to the term in which the applicant wishes to matriculate.

All applicants from abroad are required to demonstrate English language proficiency by taking the Test of English as a Foreign Language (TOEFL) and achieving a score of at least 550.

Graduate assistantships are generally not available in the first year of study. However, an applicant with an outstanding record will be considered only if he/she has taken the Test of Spoken English and achieved a minimum score of 50.

Each applicant from abroad must furnish a statement of financial status to the Graduate School. Approximately $17,000 annually is required for educational and living expenses.

Applicants admitted to graduate study will be issued an I-20 Form when appropriate. No international student seeking admission should leave his/her country before obtaining an official offer of admission from the dean of the Graduate School.

CATEGORIES OF ADMISSION

Degree Status

Applicants for degree programs may be admitted to Approved, Qualified, or Provisional Status.

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.

Provisional Status

Admission to Provisional Status may be granted to an applicant who has failed to meet one or more of the admission requirements.
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.

Qualified Status

Admission to Qualified Status may be granted to applicants who have met all requirements except for prerequisite course work which must be completed by the end of the second registration. Upon completion of such work, 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.

Non-Degree Status

Applicants who do not wish to earn a graduate degree but want to take graduate courses are classified as Non-Degree students. Applicants for this status MUST possess either a graduate degree earned at an accredited North American institution or a bachelor's degree at an accredited institution.

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 considered to be in Non-Degree status. The status of those who are admitted will be converted to degree status retroactively.

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 a Transient 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. Students in Non-Degree, Deferred, or Transient Status whose cumulative Grade Point Average falls below a 3.00 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) by registering through the Graduate School. Enrollment in certain courses may be limited to Degree students, however. Registration and fee payment procedures are outlined by the Registrar’s Office 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 on pages 162-163.

The number of credits for which a student may register is subject to certain limits as defined on page 163. Registrations not in compliance with University, Graduate School, and departmental policies are subject to cancellation by the dean’s office.

Course numbers for certain activities are uniform throughout the Graduate School and are not listed separately for each department.

Continuing Enrollment ........................................... 996
Independent Study Report ................................... 997
Thesis ............................................................. 998
Dissertation ...................................................... 999

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.
CONTINUING ENROLLMENT—996

Students who previously have registered for all of the necessary credits of course work, 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, advisee, 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.

WITHDRAWAL FROM THE UNIVERSITY

A student wishing to withdraw from the University before the end of a semester must secure a Withdrawal Report Form from the Graduate School or the Dean of Students Office. Failure to do so will result in a grade of F in all classes and no refund of fees.

Although there is no specific policy regarding withdrawal from the Graduate School, it is recommended that the student inform the Graduate School of withdrawal from a degree program. Students who are not enrolled for extended periods of time cannot be assured of a place in some programs.

GRADUATE CREDIT

Graduate credit may be earned only by students enrolled in the Graduate School and in courses listed in the Graduate section of this catalog. UND seniors who have obtained special permission as described in pages 162-163 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. Only those courses listed in the Graduate Catalog may be used in the major or in a minor.

All UND courses numbered 300 and above and listed in this catalog 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 typically 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. 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:

1. Advisor or Advisory Committee

2. 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.

3. The dean of the Graduate School

4. The Graduate Committee

5. The Student Academic Standards Committee (as described in the Code of Student Life)

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 and 3 shall be within 10 class days of their receipt; response by the Graduate Committee shall be within a reasonable period of time consistent with its meeting schedule.

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 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. 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;
2. is within twelve credits of the baccalaureate degree;
3. completes the degree requirements in the current semester;
4. has an overall GPA of at least 3.00;
5. is carrying a total academic load of no more than 16 credits during a semester or 8 credits during the summer session;
6. is not taking the courses for S/U credit;
7. the credits sought will not be used to complete requirements for the baccalaureate degree.

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 six credit hours in a summer session. A graduate student may carry no more than sixteen credit hours per semester or 8 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 are allowed the loads indicated in the table below.

<table>
<thead>
<tr>
<th>Graduate Activity</th>
<th>1/2 Time (minimum-maximum)</th>
<th>3/4 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 Registrar's Office. 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) 4 Honor Points</td>
</tr>
<tr>
<td>B</td>
<td>(Excellent) 3 Honor Points</td>
</tr>
<tr>
<td>C</td>
<td>(Acceptable) 2 Honor Points</td>
</tr>
<tr>
<td>D</td>
<td>(Passing, but no graduate credit awarded) 1 Honor Point</td>
</tr>
<tr>
<td>F</td>
<td>Failure 0 Honor Points</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>

Computation of the Graduate Point Average

To calculate the Grade Point Average (GPA), multiply the Honor Point Equivalent for each course times the number of credit hours associated with each course. The GPA is obtained by dividing the total honor points for all courses by the total credits for the courses (grades of I, S, or U are not a part of this calculation). A student’s cumulative GPA is based on all course work, 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-Uncertain 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-Uncertain Grading

Some seminars, research, thesis, dissertation, and field work may be graded on a Satisfactory-Uncertain basis. Grades of less than C are not included in the number of credits calculated in the GPA. Courses with grades of Incomplete are neither counted as partial fulfillment of degree requirements nor calculated in the GPA.

REMOVAL OF INCOMPLETE GRADES

University policy specifies that the grade of Incomplete is to be given only when circumstances beyond the student’s control have prevented completion of the course within the official dates of the session, provided the work completed up to four weeks before the end of the semester was satisfactory. A grade of “I” is temporary and indicates that the student’s work must be made up and completed without repeating the course.

A graduate student who receives a grade of “Incomplete” is obligated to complete the necessary work and submit it to the instructor in a timely manner in order that the “Incomplete” can be replaced by a permanent grade. The letter grade must be submitted to the Registrar by the date specified by the instructor on the Incomplete grade form or within the first five weeks of the beginning of the next regular semester, whichever date occurs first. If the Incomplete is not replaced before the deadline, it will be converted by the Registrar to the grade specified on the Incomplete grade form submitted by the instructor.

The grade of “Incomplete” received for registration in Thesis (998), Dissertation (999), Independent Study (997), Research Design (Engineering 959), English 591, Professional Exhibition (VA 599), or Research (leading to the thesis or dissertation), activities which usually span several sessions, need not be replaced until the conclusion of the activity, usually a student’s final semester.

Students may not register in courses in which they currently hold grades of Incomplete. This rule does not apply to registration for Thesis, Dissertation, Research, or Engineering Research Design.

For students to remain on the graduation list for a given semester, Incompletes in all courses/seminars/practica, etc. must have been made up by the date designated in the academic calendar.

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.
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 academic standing of all graduate students whose cumulative GPA falls below 3.00 (2.75 for Master of Engineering program) is reviewed at the end of each academic term by the graduate dean. For such students the following action normally results:

(a) Degree Students who are in Provisional Status, Non-Degree Students and Deferred Admission Students will be dismissed.
(b) Degree Students who are in Approved Status will be placed on probation and allowed one additional registration of a maximum of twelve hours for a regular semester or six hours in a summer session. If after such a registration the GPA is still less than 3.0, the student will be dismissed.
(c) Degree Students in Qualified Status may be treated the same as Degree Students in Approved Status.

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:

1. The work must have been taken while enrolled as a graduate student in an accredited institution offering a graduate degree in the field.
2. The work must have received graduate credit at the institution where it was earned.
3. Only that work which will be less than seven years old at the time of the UND degree is awarded may be transferred, with the exception that work which was part of a completed prerequisite graduate degree may be transferred even though it is more than seven years old.
4. The student must have earned a grade of B or better in the courses offered for transfer.
5. Credits offered for transfer must not have been used to satisfy degree requirements for another degree previously earned or in process.
6. Work credited toward a master’s degree from another institution may be accepted toward a specialist’s or doctoral degree at UND.
7. Any additional transfer work to be applied toward the major area for the specialist’s or doctoral degrees must be post-master’s level and from an institution offering post-master’s degrees in the discipline.
8. Additional transfer work (i.e., 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 of specialist’s or doctoral programs.
9. Work from an incomplete master’s degree program at another institution is transferable only to a master’s degree at UND.
10. The amount of transfer credit that may be accepted toward the master’s degree is one-fourth of the number of hours required for that degree (usually 8 semester credits).
11. The amount of transfer credit that may be accepted toward the specialist’s diploma may not exceed one-half the course credits required beyond the master’s degree (usually 16 credits) plus the master’s degree credits (usually a total of 48 credits).
12. The amount of transfer credit that may be accepted toward the doctoral degree may not exceed half the number of required credits beyond the master’s degree (usually 30 credits) plus the master’s degree credits (usually a total of 60 credits).
13. Students may transfer up to 32 semester credits of basic medical science courses, taken as part of a completed M.D. program, to the program required for the Ph.D. degree. To effect such transfer, in addition to meeting the usual requirements, students must pass a diagnostic examination over the subject matter of each of the courses, such examinations to be administered by the regular offering department. Such examinations must be completed and recommendations transmitted to the dean of the Graduate School by the advisory committee no later than the end of the first semester of enrollment in the Ph.D. program. On the basis of the examination results, transfer credit may be recommended, a student may be required to audit courses, or a student may be required to take courses for credit.

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 two 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.

Overage 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.

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 a 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

Extended Degree Programs and Distance Education Opportunities

The University of North Dakota, through the division of Continuing Education Division, offers extended degree programs and distance education opportunities 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 IVN Network utilizing two-way compressed video and audio. Other degree programs are offered on site at distance locations, and some are offered using delayed video or the educational telephone network (ETN).

Extended 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 delivered on site at the Grand Forks Air Force Base and on site at the Minot Air Force Base. A Master’s Degree in Space Studies is offered also via the Internet and delayed videotape to students throughout the United States and internationally
- Master’s Degree in Medical Technology delivered from Grand Forks to numerous sites in the United States via the Educational Telephone Network (ETN)
- Master’s Degree in Rural Health Nursing delivered from Grand Forks to Fargo, Jamestown, Minot, and Bismarck via IVN
- Master’s Degree in Educational Leadership delivered from Grand Forks and Fargo (joint program of UND and Tri-College University) to Grand Forks, Fargo, Minot, Williston, and Bismarck via IVN
- Specialist Diploma (Ed.S. Degree) delivered from Grand Forks to Bismarck and Minot via IVN

Ordinarily, no more than one-half of a student’s program for the master’s degree may be taken off campus. Students enrolled in extended degree programs offered at cooperating sites by the UND Continuing Education Division are exempt from this policy.

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 at least a baccalaureate degree, and grading is on the Satisfactory/Unsatisfactory system. Students will be registered as Continuing Education students and do not have to be admitted to the Graduate School.

Graduate level workshops are offered by the graduate departments under the course number “900 Graduate Workshop.” For each such registration, a transcript entry will be made showing the title, credit, and grade for the workshop.

Since graduate level workshops are not designed to be part of a graduate program, their credit may not be applied toward graduate degree requirements and, therefore, may not be included on programs of study. If the workshop involves critical review, analyses, discussion, theory, or content similar to graduate courses, it may be considered for inclusion on the program of study. Programs of study proposing inclusion of such workshops credit must be accompanied by a brief explanatory note documenting that the workshop meets these criteria. In any event, no more than four graduate workshop credits may be counted toward a master’s degree or specialist’s diploma, and no more than eight credits may be counted toward a doctoral degree.

Correspondence Courses

Correspondence 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 course work 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. The eligibility to proceed with the graduation process (i.e., final examination) will be certified by the Graduate School, and the Preliminary Approval and the Final Report forms will be sent to the advisor approximately six weeks before graduation. (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. 7-10 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 semester. 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. Only Degree Students who have been admitted to the UND Graduate School may hold such awards or appointments.

2. A student may be removed from an appointment or award at any time due to unsatisfactory academic performance or standing.

3. Students in good academic standing (i.e., a GPA of 3.00 or higher) are eligible for reappointment.

4. Students must be carrying a full academic load in a degree program in the Graduate School for each semester or summer session that they hold an appointment or award. A full load must be maintained throughout the semester or summer session.

5. Students who withdraw from or are dismissed from the Graduate School immediately become ineligible for and may not continue to hold an appointment or award.

6. 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 neither register in the Graduate School nor hold an appointment or award unless, by the opening of the session and the beginning date of the appointment or award, they hold a bachelor’s degree and have fulfilled all requirements for admission to the Graduate School as a degree student.

7. Students must hold a GPA record which would qualify them for approved status (see page 160).

8. Assistantship appointments will not exceed one-half time in all combinations.

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, or graduate assistantships for the next academic year commencing April 15.

Students are responsible for all other fees. Assistantships are available in most departments offering a graduate degree.

Awards and Assistantships

Chester Fritz Scholarships of $1,000 each are awarded to North Dakota students with an outstanding academic record who are continuing graduate work.

K. B. Tiffany Scholarship of $1,000 is awarded to a student pursuing a graduate degree in English.

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.

Tuition Waiver Scholarships provide for 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. Preference is given to residents of North Dakota and to students who are continuing graduate work.

Summer Doctoral Fellowships of $3,000 plus a waiver of tuition for the summer session are available to doctoral students who plan to work on their dissertation/research full time during the summer. Applications are due early in the second semester and will be evaluated on the basis of an application and recommendations from the advisor and the chairperson.

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. Most appointments may be for one-fourth or one-half of full-time service. Most assistantships are half-time assistantships which require approximately fifteen hours of work per week and permit the student to carry a minimum of six and a maximum of ten credits of graduate work each semester. A quarter-time assistant must carry eight to twelve credits per semester.

The tuition is waived by the University for graduate teaching assistants. Students are responsible for all other fees. Assistantships are available in most departments offering a graduate degree.

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 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.

Graduate Service Assistantships are available for work in several units on campus, including the Division of Student Affairs, Computer Center, and Athletic Department. Graduate students are employed half-time, or some other fraction of full-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 and non-resident fees will be waived for these assistantships. Academic load requirements are the same as for teaching assistants.
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 (pages 176-228).

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. A maximum of four semester credits may be taken in approved workshops, but workshop credits normally are not included.

The program may include just the major, the major and a minor, or the major and a cognate area (see page 175 for information regarding minors and cognates). The major must include 20 credits from the major department, and a minor or cognate area must include at least 9 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 (see page 164 for a definition of Residence). Students should expect to spend the equivalent of two years as a full-time student to complete the M.A. or M.S. program with 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 shall 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 (1996 edition), one copy of which will be provided to the student by the Graduate School when the program of study is approved. Copies also may be purchased at the University Bookstore.

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 Outline of Thesis, available with instructions from the Graduate School, then submitting the outline to the Advisory Committee for its approval. The approved outline (original and three copies) is then filed in the Graduate School to become part of the record. The outline 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 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 version 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. The appointment of a Faculty Advisory Committee. This Committee is appointed by the dean upon the written recommendation of the chairperson, or designate, of the student’s major department and normally will consist of three members, but may consist of four. 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.
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. 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 an Outline of Thesis on a form available from the Graduate School. This outline, 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 outline form and three copies must be filed 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 number 997. A maximum of 16 credits of off-campus work may be included.

The program may include just the major, the major and a minor, or the major and a cognate area (see page 175 for information regarding minors and cognates). The major must include at least 22 credits from the major department and a minor or cognate area must include at least 9 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 Outline of Independent Study, available with instructions from the Graduate School, then submitting the outline to the advisor for approval. The outline, 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 Registrar’s Office.

**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 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. **Outline of Independent Study.** Students must obtain approval of a topic for the independent study. The advisor approves the Outline of Independent Study, and the student submits the forms and three copies to the Graduate School to become part of the record. The outline 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 advisor 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, are in satisfactory academic standing, and have been certified in writing, as eligible by the Graduate School.

**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 6 credits must be in an area or areas cognate to the area of concentration. At least 6 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. (See page 165 for further information.)

**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 outline, 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 Registrar’s Office.

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 written recommendation of the chairperson of the student’s major department. 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, 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 Outline of Independent Study form and submitting the Outline 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 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 will generally 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, are in satisfactory academic standing, and have been certified as eligible by the Graduate School.

INTEGRATED MASTER OF ENGINEERING PROGRAM

The Integrated Master of Engineering program provides an opportunity for selected students to work concurrently toward the Bachelor of Science in Engineering degree and the Master of Engineering degree. Such students will be able to complete both degrees in a total of five years and will be qualified to enter the engineering profession at an advanced level with special competence in engineering design.

Admission Requirements

Applicants will be considered for admission to the Integrated M. Engr. program if they have met the following requirements:

1. A minimum of 90 semester credits toward an engineering baccalaureate degree.
2. A minimum of 36 semester credits of approved engineering courses in the work completed.
3. Academic achievement necessary to pursue advanced study in engineering. A GPA of at least 2.50 for all previous work is required.

Interested students must apply for admission to this program early during the second semester of their junior year on forms available from the UND Graduate School. Each applicant will be notified in writing by the dean of the Graduate School concerning his/her status. The academic transcripts for those admitted will be marked accordingly.

Program Requirements

Students will be assigned a permanent faculty advisor by the dean of the Graduate School upon the recommendation of the chairperson of the student’s major department and the dean of the School of Engineering and Mines. The advisor will be responsible for developing with the student a detailed program of study which meets the requirements of the B.S. degree (see page 48) and the M. Engr. degree (see page 170 of this catalog). Those credits designated specifically to meet the M. Engr. degree requirements will be listed on a M. Engr. Program of Study form available from the Graduate School. The Program of Study form must be completed and submitted to the dean of the Graduate School for final approval.

To be awarded the Master of Engineering degree, a student must satisfy the following requirements:

1. Complete all courses on the integrated program necessary to satisfy the ABET requirements for the basic level accreditation in the discipline at least one semester or summer session prior to completing the M. Engr. degree requirements. Receipt of the B.S. degree on this schedule normally will meet the requirements.
2. Submit to the Graduate School a copy of the approved undergraduate status sheet used for the award of the bachelor’s degree.
3. Complete the M. Engr. program of study containing a minimum of 30 semester credits as follows:
   (a) 15 semester credits at the 500-level.
   (b) 3 to 6 semester credits for the required design project (Engineering 595).
   (c) All major department courses at the 400- or 500-level.
   (d) No courses below 300-level.
4. Earn a GPA of 2.75 for all advanced work attempted.
5. Satisfactorily complete the design project as outlined, and submit a final written report to the advisor.
6. Pass the written final comprehensive examination(s) covering the course material in the M. Engr. program of study.

Miscellaneous

1. Financial Aid—Students in the integrated program will be eligible for awards and appointments through the Graduate School (provided they are full-time students) during their final three semesters and assuming all requirements for the bachelor’s degree have been met. They will continue to be eligible for undergraduate student financial aid until the earliest date by which they could otherwise have completed their B.S. degree program.
2. Registration—Once admitted to the Integrated M. Engr. program, students must register through the UND Graduate School;
however, academic records will be maintained also by the School of Engineering and Mines.

3. GPA requirements—Other than already stated, the GPA for the courses on the M. Engr. program of study must average no less than 2.75.

4. Transcript Entries—Admission, graduation, and status entries will appear at the time of action.

5. Candidacy—Advancement to candidacy for the M. Engr. degree includes approval of the program of study, approval of the design project outline, and award of the baccalaureate degree.

**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 course work, 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).

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 written 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. 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. Approval of a topic for the design project by having the advisor, department chairperson, and dean of Engineering sign the Outline of Design Project and submitting the Outline 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 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 in no event earlier than at the next regularly scheduled offering.

**MASTER OF FINE ARTS**

*See Visual Arts under Departmental Programs.*

**MASTER OF MUSIC**

*See Music under Departmental Programs.*

**MASTER OF PHYSICAL THERAPY**

*See Physical Therapy 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 Administration. 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 Administration.

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 Administration will include an area of concentration of at least 40 credits, including at least 20 credits in Educational Administration, 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 (see page 164 for a definition of 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 Outline for Independent Study, available with instructions from the Graduate School, then submitting the outline to the Committee for approval. The outline, 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 Registrar’s Office.

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 appointment of the Committee, the department chairperson, or designee, 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 an Outline for Independent Study on a form available from the Graduate School. This outline, when approved by the Committee and filed with three copies 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 4-year and 2-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 departments of Biology and History. Only those persons holding a master’s degree in biology, history, or closely related fields 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 on the University of North Dakota campus (see page 164 for a definition of Residence).

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 5 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 a copy will be filed with the department and the Graduate School.

A copy of the final DA 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 (1996 edition).

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 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 designee, 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 course work 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 Outline 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 Ed.D. 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 professional 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 familiarity with methods of research, all presented in a scholarly style. A maximum of 10 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 regular consecutive semesters of residence are required on the University of North Dakota campus (see page 164 for a definition of Residence).
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 (1996 edition), which will be provided to each candidate when the program of study is approved. (Copies also may be purchased at the University Bookstore.)

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 Outline of Dissertation, available from the Graduate School, then submitting the outline to the committee for approval. The approved outline must be filed in the Graduate School. The outline should be approved at least six months 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 (1996 edition), 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 course work 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 designate, 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 course work 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 Outline of Dissertation on a form available from the Graduate School (original and three copies).

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 pro-
gram 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.), (c) 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 course work 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 or more related departments (i.e., either a minor or cognate area—see page 175 for information regarding minors and cognates), but at least one-half of the work must be in the major field. The credits for the dissertation, 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 Departmental 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 (see page 164 for a definition of Residence). 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 "Departmental Programs." 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 Tests—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 for dissertation research 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 (1996 edition), a copy of which will be provided each candidate upon approval of the program of study. Additional copies may be purchased at the University Bookstore.

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 Outline of Dissertation, available with instructions from the Graduate School, then submitting the outline to the committee for approval. The approved outline is then filed in the Graduate School. The outline should be approved at least six months 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 350 word format described in the Style and Policy Manual for These 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 course work 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 tools requirements have been completed. Comprehensive examinations which are failed may be repeated only with the prior approval of the Faculty Adv-
visory Committee, the department, and the dean, but in no event earli-
er than at the next regularly scheduled offering.

Students must apply for permission to take the comprehensive ex-
amination 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 stu-
dent may not take the examination until such certification has been pro-
vided.

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 grant-
ed only after the completion of specified academic requirements and upon the recommendation of the Faculty Advisory Committee. Candi-
dates 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 ap-
pointed. 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 designate, 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 ap-
proved by the student, the Committee, and the dean of the Grad-
uate School. The program, executed on a form available from the Graduate School, should be developed no later than the be-
ginning of the second semester of work.

3. Departmental examination requirements have been completed.

4. A substantial portion of the course work for the degree has been completed with a GPA of no less than 3.00 for all work at-
tempted.

5. The scholarly tool requirement has been completed.

6. The comprehensive examination has been successfully com-
pleted.

7. A dissertation topic has been approved as evidenced by filing an approved Outline of Dissertation on a form available from the Graduate School (original and three copies).

8. Advancement to candidacy has been recommended by the stu-
dent’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 Candi-
date. 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 Ex-
amination with one dissenting vote. The dissenter must submit a writ-
ten 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 University Mi-
crofilms International before graduation.

**JOINT PH.D.–M.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 and Toxicology, and Physiology) 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 Ph.D./M.D. program should first obtain admission to the School of Medicine through the normal application process. The usual Medical School selection criteria will apply. After completing the first year of the M.D. program, students should submit an application to the Graduate School as described in this cata-
log. If granted admission, the student should then apply to the Medical School Student Performance and Recognition Committee for a “modi-
fication of original program” which will accommodate work on the Ph.D. degree while a medical student. Before actually enrolling in the Graduate School, successful applicants must request the Medical School Office of Academic Affairs to certify to the Graduate School the satisfactory completion of all courses in the first two years of the M.D. program.

Students will be expected to meet all requirements for the Ph.D.
degree as set forth in this catalog. Basic science courses taken in the first two years of the M.D. program, and which have both Medical School and Graduate School numbers, may be accepted also for credit toward the Ph.D.

Students interested in the Ph.D./M.D. program should contact the Executive Associate Dean for Academic Affairs and Research of the School of Medicine.

**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.

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 includ-
ed 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, includ-
ing 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 more 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.
Graduate Departmental Courses, Programs

Only the courses listed in this catalog may be used as part of the major or minor work for a degree program. Classes numbered 300 or higher may be applied to a cognate area. Those classes numbered 300 or higher are graduate classes while those listed with 300 or 400 numbers are upper division undergraduate classes. The 300- and 400-level courses listed in this section have been approved for graduate credit by the University Graduate Committee upon application by the department and on the basis that additional work is required of all graduate students in such courses.

Common course numbers are used for the following registrations and are not listed separately for each department:
- Continuing Enrollment ...........................................996
- Independent Study ..................................................997
- Thesis ......................................................................998
- Dissertation .............................................................999

The faculty listed are members of the Graduate Faculty. Those whose names are preceded by an asterisk are Associate Members and the others are Full Members. Only a Full Member may serve as the chairperson of the Advisory Committee (and, therefore, as the advisor) for a student pursuing a doctoral degree or specialist’s diploma. 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 Faculty 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 Carlson (Chair), Hunt, McCormack, J. C. Oberpriller (Graduate Director), J. O. Oberpriller, Olson, Rada, Rieke, Ruit

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 research 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, immuno-histochemistry, 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 is through the Ph.D. program.

Occasionally, when prerequisites are questionable, students may be admitted to the M.S. degree program. Once they have proven themselves in the graduate program, a student in the M.S. program may choose to attempt to by-pass that 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 course work, 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 to the Ph.D. program include an overall GPA of 3.50 in previous graduate work, and, if the student is new to the UND Anatomy and Cell Biology Program, performance at the 40th percentile or better on the GRE General test, 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).
3. Completion of the following core graduate level courses: Histology (515), Developmental Anatomy (518), Cell Biology (520), Gross Anatomy (513) or Neuroscience (522), 6 credits of Seminar (505), Biochemistry (500), and Readings (590), 1 credit.
4. Teaching experience in one of the following: Gross Anatomy or Anatomy for Physical and Occupational Therapy, Histology/Developmental Anatomy, Neuroscience (In unusual circumstances, this requirement may be waived by action of the faculty.)

Doctor of Philosophy

1. Four full years plus summer sessions.
2. Completion of the following core graduate level courses: Histology (515), Developmental Anatomy (518), Cell Biology (520), Gross Anatomy (513) or Neuroscience (522), six credits of Seminar (505), one credit of Readings (590), and Biochemistry (500).
3. A minimum of 10 credits of elective specialty courses as approved by the Department.
4. Demonstration of proficiency in at least one of the following areas: statistics (through course work at the undergraduate or graduate level or by equivalent practical experience), computer science (through course work at the undergraduate or graduate level or by practical experience), biochemical or cell biological laboratory research technique courses at the graduate level or by other formal training experiences appropriate to the student’s program of study. The quantity and quality of these experiences is to be determined by the student’s Faculty Advisory Committee.
5. Teaching experience in two of the following
   a. Gross Anatomy or Anatomy for Physical and Occupational Therapy
   b. Histology/Developmental Anatomy
   c. Neuroscience
6. 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

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, to 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.† 5 credits. A series of lectures and correlated laboratories providing a comprehensive study of normal microscopic structure of cells, primary tissues, and organs of the body. Each student will be provided with a loan collection of prepared slides for examination in the laboratory section of the course.

518. Developmental Anatomy.† 2 credits. Prerequisites: Anatomy 515 or equivalent. A course in human development with consideration of fertilization, implantation, placentation and organogenesis. Special emphasis is placed on analyses of variations and anomalies.

520. Cellular and Molecular Biology. 3 credits. A comprehensive series of lectures considering cell structure and function at the subcellular and molecular levels, with emphasis on basic mechanisms, experimental approaches and problem solving. Organellar biology, gene expression, cell signaling, cell cycle, development and oncogenesis are among the topics that will be addressed. Two, 90-minute lectures per week.

520R. Cellular and Molecular Biology Recitation. 1 credit. Prerequisite or corequisite: Anatomy 520. Students will participate in a discussion group in which research papers, assigned by the course instructor, are interpreted, critiqued and presented by each student. One article will be presented each week, which will complement and reinforce the material presented in Anatomy 520. One hour per week.

522. Neurosciences.† 6 credits. A multidisciplinary course in which the central nervous system is approached by integrating neuroanatomy, neurophysiology and morphology. The course is structured around a core of basic lectures, integrated with laboratories utilizing biological materials and computer-assisted instruction. Basic concepts of neuroscience are reinforced with problem-based learning, case studies and clinical correlations.

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.

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 tools in morphology and cell biology.

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.

† Available to students registering in graduate degree programs in the biomedical sciences or by permission of the instructor.

Biochemistry and Molecular Biology

Professors Detke, Johnson, Knull, Lambeth, Milavetz, Nielsen, Nordlie (Chair), Ray (Graduate Director), Shabb, Sukalski

Program Description

For more information, please visit our WEB site: http://www.med.und.nodak.edu/depts/biochem/home.htm

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. Research is conducted in the areas of intermediary metabolism, enzymology, neurochemistry, protein/protein interactions, endocrinology, enzyme and metabolic regulation, membranes, roles of free radicals in biological systems, receptor proteins, signal transduction, trace metal transport and function, protein engineering, and molecular genetics. There is also collaboration with research scientists at the United States Department of Agriculture Human Nutrition Research Center, whose research interests focus on metabolism of trace and ultra-trace elements.

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. Graduate Record Examination—General and Advanced Graduate Record Examination tests (Biochemistry, Cell and Molecular Biology; or Chemistry; or Biology).

Financial Assistance

Most students are supported by Graduate Teaching or Graduate Research Assistantships. 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 30 credit major (including research and thesis) or
   A 21 credit major and 9 credits in a minor or cognate area.
2. A grade of at least B in Biochemistry 500 or 501.
3. An overall GPA of at least 3.0.
5. Satisfactory performance on a final oral examination covering the thesis and program of study.

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 Biology 470 or its equivalent).
4. A grade of at least B in Biochemistry 500 or 501.
5. An overall GPA of at least 3.0.
6. A minor or cognate of at least 9 credits outside of the department.
7. Passing performance on oral and written comprehensive examinations covering the course work 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 will be required to pass a Qualifying Diagnostic examination normally given after three semesters of graduate work.

M.D./Ph.D.

The Department offers the M.D./Ph.D. degree. For further information consult the M.D./Ph.D. section of this catalog (page 175).
Courses

500. Survey of Biochemistry and Molecular Biology. 7 credits. First semester. Prerequisite: A year of Organic Chemistry and permission of instructor. This course covers the structures, properties, and metabolism of molecules which make up organisms. Topics include the structures and metabolism of amino acids, proteins, carbohydrates, lipids, nucleotides, and nucleic acids; enzymes; membranes; bioenergetics; hormones; biological regulatory mechanisms; molecular aspects of gene expression; hemoglobin; pH regulation; and nutrition. Emphasis is placed on the biochemistry of mammals and the variations that occur in disease.

501. Principles of Biochemistry and Molecular Biology. 5 credits. First semester. Prerequisites: A year of Organic Chemistry or one semester of Organic Chemistry plus a course in Biochemistry or Cell Biology. Permission of the course director is required. This course covers structure, properties, and synthesis of biomolecules; enzymes; bioenergetics; metabolism and its regulation; and expression and transmission of genetic information.

510. Research Tools. 2 credits. First semester. Prerequisite: Biochemistry 500 or consent of instructor. The theory and application of modern laboratory techniques including spectrophotometry, chromatography, centrifugation, electrophoresis, tissue and cell culture, immunohemistry, and radiochemistry are considered. Techniques for assay of biological constituents, purification of proteins, and the construction and use of DNA recombinants will also be covered with examples from the current literature.

514. Current Literature. 1 credit. First and second semesters. Prerequisite: Biochemistry 500 or consent of instructor. Students and faculty 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.

521. Seminar. 1 credit. Prerequisite: Biochemistry 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.

530. Advanced Topics. 1 to 3 credits. Prerequisite: Biochemistry 500 or consent of instructor. A series of topics in biochemistry and molecular biology rotated over a three year period. The list of topics may vary, but currently includes: (A) Bioenergetics, (B) Endocrinology, (C) Enzyme Chemistry, (D) Molecular Genetics, (E) Neurochemistry, (F) Protein Engineering, (G) Free Radicals in Biology, and (H) Signal Transduction.

540. Special Topics. 1 to 3 credits. Prerequisite: Biochemistry 500 or consent of instructor. Discussion of a topic in biochemistry and/or molecular biology of current interest to faculty and students.

590. Research. 1 to 10 credits. The assignments deal with pertinent research problems in various aspects of biochemistry and molecular biology.

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.

595. Readings in Biochemistry and Molecular Biology. 1 to 3 credits. Prerequisite: Biochemistry 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.

NOTE: Either 500 or 501 will be taught, depending upon curriculum changes in the School of Medicine and Health Sciences.

Biology

Professors Carmichael, Crawford, Fivizzani (Chair), Galewsky, Holloway, Hughes, Kelsch, LaDuke, Lang, D. Lieberman, M. Lieberman, Newman, Schlosser, Seabloom, Sheridan, Wrenn (Graduate Director)

Program Description

The Department of Biology offers graduate studies leading to the Master of Science (thesis and non-thesis options), Doctor of Arts, and Doctor of Philosophy degrees. These programs are designed to prepare students for academic teaching and research, 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; 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, and data analysis rooms, molecular biology laboratories, and a darkroom.

The department operates three 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 800 acres of virgin upland and lowland prairies and is located 12 miles from the campus. A third area consists of 600 acres of old fields located 17 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 up-dated 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 April 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 March 1, since most appointments are made in March. Teaching assistantships are renewable if progress toward the degree and instructional service are satisfactory. Normally, master’s degree students are limited to two years of such support, while doctoral students may receive teaching assistantship support for up to three years beyond a master’s degree. 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 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 Arts

This degree program is designed to produce broadly trained biology teachers for the four-year and junior colleges. A dissertation is not required, but students must have some research and technical writing experience as part of their program. Only those persons holding a master’s degree in biological science are eligible for admission to the program. A teaching internship is required as part of this program.

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 course work in a supporting area; (3) five credits of course work 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.
504. College Biology Teaching. 3 credits. Survey of literature and trends in college biology teaching.
520. Helminthology. 3 credits. Prerequisite: Biology 364 or equivalent. Morphology, physiology, and life histories of the worm parasites of humans and other animals.
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 343 or equivalent. Phytoecography, environmental influences, and community dynamics of grassland ecosystems with emphasis on heritage 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 or 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. Cyogenetics. 2 credits. Prerequisites: Biology 357 and 367 or equivalent. The cytological basis of genetics with special reference to chromosomal structure, number aberrations, 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.
587. Teaching Internship in Biology. Up to 12 credits. Supervised experiences in college biology teaching and/or curriculum development.
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. Examples include: Aquaculture, Big Game Biology, Biorhythms, Conservation Biology, Fire Ecology, Molecular Techniques, Plant-Animal Interactions, Sex Determination and Speciation.
599. Research. Credits arranged. Maximum of 15 credits per semester. Intended for students conducting original research in consultation with staff. S/U grading only.
312. Evolution. 3 credits.
332. General Ecology. 3 credits.
332L. General Ecology Lab. 1 credit.
333. Population Biology. 3 credits.
334. Ecology of Animal Parasites. 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.
343. Plant Physiology. 3 credits.
343L. Plant Physiology Lab. 1 credit.
357. Modern Genetics and Man. 3 credits.
361. Plant Morphology. 4 credits.
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. 2 credits.
371. Anatomy and Adaptations Laboratory. 2 credits.
372. Vertebrate Natural History. 3 credits.
375. Invertebrate Zoology. 4 credits.
376. Developmental Biology. 3 credits.
425. Ichthyology. 3 credits.
427. Ornithology. 3 credits.
428. Mammalogy. 3 credits.
431. Wild Life Management. 4 credits.
432. Fish and Wildlife Disease. 3 credits.
433. Aquatic Ecology. 3 credits.
435L. Aquatic Ecology Lab. 1 credit.
438. Fisheries Management. 3 credits.
442. Physiology of Organs and Systems. 4 credits.
470. Biometry. 3 credits.

Business Administration

Professors Beard, Bronson, Carlson, Chacko, Chong, Dougan, Eberhardt, Elbert, Ellingson, Escarraz, Faircloth, Hansen, Hillner, Kim, Lawrence (Chair), Lee, Loyland, D. Markovich, Moser, S. Nelson, T. Nelson, Ness, Park, Potter, Vitton, Wambsganss, Wilde, Yang, Zahrly; also Graduate Faculty from Economics: Professors Bagheri, Biederman, Blackwell, Ceyhun, Khactu, Korbach, O’Neill, Ramsett (Chair), Stradley

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 the American Assembly of 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.

Admission Requirements

Admission to Approved Status requires:
1. A baccalaureate or higher degree from a regionally accredited institution.
2. Completion of the Graduate Management Admission Test (GMAT) with a score that equals or exceeds an overall total score of 450.
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 4.00 scale).
4. Command of the MBA Core Curriculum (see description below).
5. A composite index score of at least 950 determined by the formula:
   \[
   \text{GMAT} + 200 \times \text{overall undergraduate GPA}
   \]

   Under no circumstances will applicants with GMAT scores below 400 be recommended for admission. The average GMAT score of successful applicants for the five year period beginning with the 1991-92 academic year was 529.

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 have been demonstrated by completion of the following UND undergraduate courses or their equivalents by or competency examinations.

Accounting 200-201 or Accounting 295
BVED 217
Economics 201
Economics 202
Economics 210
Mathematics 204
Accounting 315
Accounting 316
Accounting 310L
Management 300
Management 301
Marketing 301

The above courses are described in the departmental listings covering undergraduate programs.

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 Administrator is responsible for coordinating all aspects of the program. Business courses carrying graduate credit status from the departments of Accounting, Business Administration, Economics, Finance, Management, and Marketing 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 997 — 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 Policy Formulation and Administration 3 credits
   Management 515 Advanced Managerial Theory 3 credits
   Marketing 510 Strategic Marketing 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
   Bus. Admin. 502 Business Research Methods 3 credits

   TOTAL 24 credits

2. Cognate elective courses may be chosen from those offered at the 300-, 400- and 500-level in the Departments of Accounting, Economics, Finance, Management, Marketing, and related fields. A cognate may be chosen from selected courses in the aviation management area.

   All cognate elective courses and aviation management cognate courses must be approved by the M.B.A. Program Administrator 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 Administrator 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, Policy Formulation and Administration. Students must complete 12 credits of M.B.A. curriculum courses before enrolling in Management 505.

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.

504. Advanced Auditing. 3 credits. Prerequisite: the same as for 503. Auditing theory and practice.

505. 506. Specialized Accounting Problems. 6 credits. Prerequisite: the same as for 503. Research, analysis, and problem solving.

507. Advanced Managerial Accounting. 3 credits. Functional uses of accounting in management of the enterprise.

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 306. 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 6 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. Auditing. 3 credits.
406. Auditing Problems. 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.
996. Continuing Enrollment. Variable credit.
997. Independent Study. 2 credits. (See page 162 for details on 996 and page 168 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. Specification, estimation, and diagnostic techniques are emphasized for both forecasting and simulation.
514. Advanced Managerial Economics. 3 credits. Prerequisite: Economics 201, BVED 217 and Math 204, 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 338 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. Special Topic in 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.
575. 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. 1 to 3 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.
400. History of Economic Thought. 3 credits.
416. Mathematics for Economists. 3 credits.
438. International Money and Finance. 3e credits.

FINANCE

501. Managerial Finance. 3 credits. Prerequisite: Finance 310. The development of financial decision-making skills, using the case-analysis method, through application of financial theory to topical areas such as asset management, financial instruments, markets, capital structure, dividend policy, cost of capital, etc.
528. Investment Theory and Management. 3 credits. Prerequisites: Finance 501 or consent of instructor. An introductory course 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.
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.
418. Cases in Managerial Finance. 3 credits.
428. 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 modes in areas such as linear and quadratic programming, inventory systems, queuing games, game theory, and simulation.
505. Policy Formulation and Administration. 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 an 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. Macro-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.
406. 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.
428. Investment Analysis and Portfolio Management. 3 credits.

MARKETING

510. Strategic Market Planning. 3 credits. Prerequisite: Marketing 301. 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 510. 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 301. 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.
592. Graduate Research in Marketing. 1 to 3 credits. Prerequisites: BADM 502 and consent of instructor. Repeatable to 6.
593. Graduate Readings in Marketing. 1 to 3 credits. Repeatable to 6. Prerequisite: Consent of instructor.
425. Current Perspectives in Global Marketing. 3 credits.
Business Education and Vocational Education

Professors Langemo, Navara (Chair), Prigge

Program Description
Graduate study in the Department of Business and Vocational Education may lead to the Master of Science degree in Business Education or Vocational Education. Degree programs are designed to serve those who desire to enter college, post-secondary, or secondary level teaching, supervision, or administration.

Admission Requirements
Master of Science in Business Education (thesis or non-thesis)
A minimum of 20 semester hours of undergraduate work in education or business courses (may include business education and business administration courses).

Master of Science in Vocational Education (non-thesis)
1. A minimum of 20 semester hours of undergraduate course work in an area related to vocational education, e.g., home economics, agriculture, counseling and guidance, industrial technology, etc.
2. At least one year of successful teaching experience or occupational experience equivalent to vocational certification requirements of the North Dakota State Board for Vocational Education.

Degree Requirements
Master of Science in Business Education
1. Major must include courses in business and vocational education and a thesis or independent study.
2. A minor in a single field or a cognate in related fields may be chosen from fields such as data processing, vocational education, accounting, business law, management, or marketing; liberal arts fields are also acceptable.
3. The following courses must be included on the program of study: BVED 524, 546, 550 and VED 535.

Master of Science in Vocational Education
1. Major must include courses in vocational education and an independent study.
2. A minor or cognate area may be selected from such fields as business education, marketing education, home economics, industrial technology education, educational administration, special education, counseling and guidance, and agricultural education.
3. Candidates minorin in agriculture or home economics may complete minor requirements at North Dakota State University or at an institution offering a similar graduate program.
4. Program of Study must include: VED 535, 444 or 528, 530, and 541(5 credits).

BUSINESS EDUCATION
503. Improvement of Instruction and Research in Business Education Skill Subjects. 1 to 4 credits. Organization, methods of instruction, and research in business education skill subjects—keyboarding, shorthand and alternative writing methods, or keyboard-based skill courses.
505. Improvement of Instruction and Research in Business Education Subjects. 1 to 4 credits. Organization, methods of instruction, and research in business education cognitive subjects, such as accounting/bookkeeping, basic writing, accounting, business communications, office procedures, computers/data processing.
524. Principles and Practices in Business Education. 3 credits. Evaluation of aims and philosophies of business education at secondary, junior college, and college levels in terms of vocational and general education needs of youth; current philosophies and their application to classroom practices; professional organizations and literature; evolution of business education principles and practices; content and curricular considerations for business programs.

537. Business and Vocational Education in the Post-Secondary School. 3 credits. Administrative and curricular considerations in business and vocational education programs for junior colleges, private business schools, technical institutes, teacher-education programs, collegiate schools of business, and graduate schools; business teacher certification; field trips and interviews with officials at post-secondary institutions; independent study of institution of student’s choice.
539. Professional Writing in Business Education. 3 credits. Preparation of behavioral objectives for business non-skill and skill subjects. Development of shorthand and keyboarding teaching materials to include such controls as syllabic intensity, stroke intensity, and diagraphical constituency; textbook and article writing; legal aspects of royalty and authorship. Each student must prepare three articles and a textbook prospectus to be submitted for publication.
546. Research Seminar in Business Education. 1 to 3 credits. A study of dissertation review and research design. SU grading only.
550. Office Technologies and Concepts of Information Management. 3 credits. A study of each specialty area included in modern administrative office management, including office layout, design, and space utilization; systems and procedures; personnel administration applied to support services management; business records management; word processing; data processing; reprographics; office work simplification; work measurement and analysis; and organization and training.
591. Research in Business Education. 1 to 3 credits.
595. Readings in Business and Vocational Education. 1 to 3 credits. Repeatable to six credits.
405. Records Managements Systems. 3 credits.
409. Data Resource Management. 3 credits.
413. Telecommunications. 3 credits.
420. Methods and Materials for Cooperative Office Education Programs. 2 credits

VOCATIONAL EDUCATION
527. Evaluation and Measurement in Vocational Education. 3 credits. Principles of evaluation; prognosis and aptitude tests for vocational occupations; statistical interpretation of tests; grading and evaluation in skill and non-skill subjects; standardized tests; test construction for specific vocational subjects.
528. History and Principles of Vocational Education. 3 credits. Evolution of the vocational education movement and its motivating influences in Europe and America; philosophies of vocational education; principles, practices, and trends relating to legislation; relationship of vocational education to the total plan of public education.
529. Part-time and Adult Programs in Vocational Education. 3 credits. Problems of adult vocational education including the determination of need, selection of teachers, appropriate teaching procedures, methods of financing, and planning community programs.
530. Administration and Supervision of Vocational Education. 3 credits. Principles of effective administration and supervision; administering programs sponsored by federal vocational legislation and administered by state and local boards of education; functions of state plans, study of program standards; planning physical facilities; supervisory duties on local, state, and national levels.
531. Vocational Education for Youth with Special Needs. 2 credits. A study of the characteristics and education needs of mentally retarded, socially and emotionally disturbed, and physically handicapped students, their employment opportunities, developing meaningful vocational sequences to meet their special needs.
535. Introduction to Research. 3 credits. Study of significant research in vocational education; research methodology; organization and presentation of research data; application of research to vocational education topics; supervision of original investigations being made by graduate students.
536. Seminar in Vocational Education. 2 credits. Opportunity for graduate students to study advanced problems in vocational education.
540. Special Topics in Vocational Education. 1 to 3 credits. An intensive study of a topic of interest to vocational educators. The topics of study will vary and the course may be repeated for credit provided the subject of study differs.
541. Directed Study in Vocational Education. 1 to 2 credits. Specialized study to identify and analyze facets of vocational education through campus and field experiences. Philosophy, objectives, issues and problems, criteria for evaluation, cooperative programs, youth organizations, research, and administration of individual vocational education service areas. Repeatable to 6 credits.
580. Internship in Vocational Education. 1 to 6 credits. Field work in supervising and administering vocational education programs on secondary or post-secondary levels or occupational experience while under the direction of a qualified vocational administrator or supervisor. S-U grading only. May be repeated.
421. Coordinating Techniques. 2 to 3 credits.
444. Philosophy of Vocational Education. 3 credits.

DISTRIBUTIVE EDUCATION
596. Problems in Distributive Education. 1 to 3 credits. Credits and hours arranged by the instructor. Selected problems in developing and expanding distributive education.
Chemical Engineering
Professors Benson, Erjavec, Hasan, Hurly, Newell, Olson, Owens (Chair), Sternberg, Young

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 multidisciplinary Energy Engineering Ph.D. program. The M.S. or M.Eng. degree can be completed in one year 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.

Research interests in the department include contaminant transport in porous media, in-situ bioremediation of metals and volatile organic compounds, multiphase fluid flow and heat transfer in wellbores, polymers, carbon fibers, composite materials, process modeling and control, and engineering statistics. Research projects are often done in collaboration with the Energy & 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. (Students holding a B.S. degree in a science field may be admitted to Qualified Status with an obligation to acquire a background in Chemical Engineering.)
2. An overall undergraduate GPA of at least 2.75 or a GPA of at least 3.00 for the last two years.
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.

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.

Courses
501. Advanced Transport Phenomena. 3 credits. Prerequisite: Chemical Engineering 301 and Mathematics 351. 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 energy engineering. This course will involve using advanced mathematics to model transport systems of importance in engineering science and design.

Chemistry
Professors Abrahamson (Chair), Ballintine, Baltisberger, Borgerding, Hawthorne, Hoffmann, Jensen, Kozliak, Mallik, Pierce, Smoliakova, Stahl, Thomasson, Tilotta, Woolsey

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.


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 and also to determine whether a student may enter a Ph.D. program. Students with an unsatisfactory performance
on any of these exams may repeat the exam twice within the next year of study.

Admission Requirements
1. A baccalaureate degree with a major in chemistry.
2. Undergraduate credit in mathematics through integral calculus.
3. One year of physics.
4. One year of German desirable.
5. Graduate Record Examination General and Advanced Chemistry tests for students with degrees from foreign institutions.
6. Students with a bachelor’s degree may be directly admitted into the Ph.D. program.

Degree Requirements

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 from major division (Analytical: 540, and one of: 541, 542, 543; Inorganic: 510, one of: 511, 512; Organic: 520, 521, 522; Physical: 530, 531, 532).
3. Three (3) credit hours of 500-level courses in two divisions other than the major.
4. Three (3) credit hours of additional elective course work.
5. Chemistry 455 (if equivalent course has not been taken previously).
6. Chemistry 388 (if an equivalent course has not been taken previously).
7. Chemistry 599 (Research).

Program Description

Civil Engineering

Professors Aplanian (Chair), Gullicks, Jerath, Mason, Moretti, Phillips

The Department of Civil Engineering offers graduate programs leading to the Master of Engineering degree with 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

Courses

509. Seminar, 1 credit.
510. Intermediate Inorganic Chemistry, 3 credits. Three hours lecture. Prerequisite: Chemistry 454 or equivalent. Review of atomic concepts, molecular topologies, and symmetry. Theories of bonding including directed and undirected atomic orbital view. An introduction to the chemistry of transition metals.
511. Advanced Inorganic Chemistry, 3 credits. Three hours lecture. Prerequisite: Chemistry 510. Structure of coordination compounds, mechanisms of inorganic reactions, biochemical applications of inorganic chemistry.
512. Organometallic Chemistry, 3 credits. Prerequisites: Chemistry 510. Preparation, bonding and reactivity of organometallic compounds, both main group and transition metal.
518. Special Topics in Inorganic Chemistry, 1 to 3 credits. Prerequisite: Chemistry 510. Topic of current interest to be considered each semester; may be repeated for credit if topic is different.
520. Advanced Organic Chemistry I, 3 credits. Three hours lecture per week. Prerequisite: Chemistry 352 or equivalent. Reaction mechanisms, carbocations and radicals. Substitution, elimination and addition reactions. Carbonyl chemistry.
525. Special Topics in Organic Chemistry, 1 to 3 credits. Prerequisite: Chemistry 520 or 521. Topic of current interest. May be repeated for credit if topic is different.
530. Chemical Thermodynamics, 3 credits. Three hours lecture. Prerequisite: Chemistry 450 or equivalent. Application of classical and statistical thermodynamics to chemical equilibrium, phase equilibrium and the physical properties of solutions.
531. Chemical Dynamics, 3 credits. Three hours lecture. Prerequisite: Chemistry 451 or equivalent or consent of instructor. Study of the kinetics of complex, coupled chemical reactions in gas and solution phases; dynamics of gas phase reactions.
532. Introduction to Molecular Structure and Spectroscopy, 3 credits. Three hours lecture. Prerequisite: Chemistry 451 or equivalent. Application of the time-dependent Schrödinger equation to rotational, vibrational and magnetic spectroscopy; selection rules. Relation of molecular structural parameters and spectroscopic measurements; principles of group theory.
534. Quantum Chemistry, 3 credits. Three hours lecture. Prerequisite: Chemistry 532. Study of the electronic structure of atoms and molecules using modern approximation methods; formal aspects of various perturbation and variational techniques as applied to chemical problems.
537. Graduate Cooperative Education, 1-9 credits. Prerequisites: M.S. students must have minimum of 26 credits. Permission of Department Chair. Ph.D. students must have a minimum of 32 credits. Practical experience of applying advanced concepts in chemistry. Experience will vary from student to student and must be coordinated with co-op host.
539. Special Topics in Physical Chemistry, 1 to 3 credits. Prerequisites: consent of department. Topic of current interest. May be repeated for credit if topic is different.
540. Chemical Instrumentation, 3 credits. 2 hours lecture and three hours laboratory. Prerequisite: Chemistry 461 or equivalent. Fundamental principles of analog and digital electronics as applied to chemical instrumentation. Topics covered include D.C. electronics, A.C. electronics, semiconductors, amplifier circuits, operational amplifier apparatus, and digital electronics.
541. Analytical Spectroscopy, 3 credits. Three hours lecture. Prerequisite: Chemistry 461 or equivalent. Fundamentals of analytical spectroscopy including principles of emission spectroscopy, flame photometry, atomic absorption, infrared and Raman spectroscopy, ultraviolet/visible spectroscopy, and fluorescence.
542. Electrochemical Methods, 3 credits. Prerequisite: Chemistry 461 or equivalent. Three hours lecture. Topics ranging from the fundamentals of electrochemistry (including thermodynamics, kinetics, and mass transfer) in applications of contemporary electroanalytical techniques such as cyclic voltammetry, digital simulation, and spectrotocotomy are discussed.
543. Chromatography, 3 credits. Prerequisite: Chemistry 461 or equivalent. Three hours lecture. Fundamentals of modern chromatographic techniques including principles of band broadening, gas chromatography, liquid chromatography, and representative sampling problems.
549. Special Topics in Analytical Chemistry, 1 to 3 credits. Prerequisite: Chemistry 540. Topic of current interest to be considered each semester; may be repeated for course if topic is different.
599. Research, Credits arranged. Maximum of 15 credits each semester. May be repeated for credit.
Clinical Laboratory Science

Professors Bruce (Graduate Director), Larson, Sopher

Program Description
The Department of Pathology offers a graduate program leading to the Master of Science Degree in Clinical Laboratory Science, non-thesis option. The M.S. degree is offered both on campus and through teleconferencing. It provides a broad medical science background. This curriculum is designed to prepare students for careers as administrative laboratory directors, clinical laboratory consultants, technical supervisors or laboratory educators.

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, with a maximum of 16 credits available through teleconferencing.
2. Must be on the UND campus for a minimum of one regular summer session and three one-week courses (e.g., Pathology 510, 511, 512).
3. Major area is 22 credits in the clinical laboratory sciences.
4. A cognate area of study or minor (minimum of 9 credits) is optional.
5. The required core is as follows:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PATH 501</td>
<td>Quality Assurance in the Clinical Laboratory</td>
<td>2 cr</td>
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<tr>
<td>PATH 502</td>
<td>Erythrocytes in Health and Disease</td>
<td>2 cr</td>
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<tr>
<td>PATH 503</td>
<td>Leukocytes in Health and Disease</td>
<td>2 cr</td>
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<tr>
<td>PATH 505</td>
<td>Financial Management of the Clinical Lab</td>
<td>2 cr</td>
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<tr>
<td>PATH 506</td>
<td>Clinical Chemistry</td>
<td>2 cr</td>
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<tr>
<td>PATH 507</td>
<td>Clinical Immunohematology</td>
<td>2 cr</td>
</tr>
<tr>
<td>PATH 510</td>
<td>Leukocytes in Health and Disease (Laboratory)</td>
<td>1 cr</td>
</tr>
<tr>
<td>PATH 511</td>
<td>Leukocytes in Health and Disease (Laboratory)</td>
<td>1 cr</td>
</tr>
<tr>
<td>PATH 512</td>
<td>Immunohematology (Laboratory)</td>
<td>1 cr</td>
</tr>
<tr>
<td>PATH 521</td>
<td>Seminar</td>
<td>1 cr</td>
</tr>
<tr>
<td>PATH 591</td>
<td>Directed Studies</td>
<td>2 cr</td>
</tr>
<tr>
<td>PATH 997</td>
<td>Independent Study</td>
<td>2 cr</td>
</tr>
<tr>
<td>MBIO 509</td>
<td>Immunology</td>
<td>2 cr</td>
</tr>
<tr>
<td>MGMT 305</td>
<td>Managerial Concepts</td>
<td>3 cr</td>
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</tbody>
</table>

Total 22-25 cr

* Courses with an asterisk (*) will be offered over the Education Telephone Network (ETN).
† The requirement for the major is PATH 505 and/or a management course such as MGMT 305.

Courses

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>PATH 501</td>
<td>Quality Assurance in the Clinical Laboratory</td>
<td>2 cr</td>
</tr>
<tr>
<td>PATH 480, 481, 482 or equivalent courses. The course will consist of lectures, readings, and case studies of quality assurance for the clinical laboratory.</td>
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<tr>
<td>502. Erythrocytes in Health and Disease, 2 credits. Prerequisite: Path 325, 510 or consent of instructor. 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.</td>
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<tr>
<td>503. Leukocytes in Health and Disease, 2 credits. Prerequisite: Path 325, 481 or consent of instructor. This course presents the normal and abnormal structure and function of each of the peripheral blood leucocytes. Emphasis is on the molecular level, light and electron microscopic evaluation and the role of the laboratory in diagnosis of each condition.</td>
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Admission Requirements

1. Bachelor of Science degree in Civil Engineering from an ABET accredited program.
2. Graduate Record Examination General Test for applicants from non-ABET accredited programs.

Degree Requirements

1. Thirty (30 credit) hours.
2. Fifteen (15) required credits, including 6 credits of Engineering 595 (Design Project).
   - The Soils-Structures option requires 501 or 502, 414, and ME 529. The Environmental-Water Resources option requires 531, 532, and 434 or 533. The General option requires 511 or 414, 531, and 523 or 524.
3. Fifteen (15) credits of electives chosen from engineering, physical sciences, life sciences, computer science, and mathematics.

Courses

051. Mechanics of Materials II, 3 credits. Prerequisite: Civil Engineering 301. Analysis of stress and strain, theories of failure, energy methods, torsion of thin-walled sections, unsymmetrical bending, shear center, curved beams, beams on elastic foundations, stress concentration.
052. Structural Stability, 3 credits. Prerequisite: Civil Engineering 301. Stability of columns, beam-columns and frames, inelastic buckling, critical loads by the energy method, torsional buckling, buckling of rings and curved bars.
053. Applied Hydraulics, 3 credits. Prerequisite: Civil Engineering 423. Study of advanced topics in hydraulics. Computer applications. Content will vary.
054. Open Channel Hydraulics, 3 credits. Prerequisite: Civil Engineering 306. Study of advanced topics in open channel hydraulics. Computer applications.
055. Environmental Engineering III, 3 credits. Prerequisite: Civil Engineering 431. Unit Operation and process design for water and wastewater treatment; physical, chemical, and biological systems; plant design project; computer-assigned design analysis.
056. Environmental Engineering IV, 3 credits. Prerequisite: Civil Engineering 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.
057. Industrial Wastes, 3 credits. Prerequisite: Civil Engineering 431. Industrial processes and waste characterization, regulatory law, specialized treatment systems, hazardous wastes, economic analysis; plant tours of potato, sugar, meat, dairy, paper and pulp products and metal plating industries.
059. Plate and Shell Structures, 3 credits. Prerequisite: Civil Engineering 301 and 352. Classical plate bending theory, rectangular and circular plates, slab analysis by energy and numerical methods, anisotropic plates, large deflection theory, buckling of thin plates.
060. Thin Shell Structures, 3 credits. Prerequisite: Civil Engineering 301 and 352. 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.
061. Prestressed Concrete—Analysis and Design, 3 credits. Prerequisite: Civil Engineering 352. Methods of prestressing, design of simple and continuous beams, creep considerations, buckling, effect of time and load, and permissible stresses.
062. Numerical and Matrix Methods of Structural Analysis, 3 credits. Prerequisite: Civil Engineering 352. Methods of successive approximations and numerical procedures for solution of complex structural problems; matrix formulation of structural problems; flexibility and stiffness methods of analysis.
063. Soil Engineering Research, Credit arranged. May be repeated to a maximum of 12 credits.
064. 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 formal written report. S/U grading only.
065. Foundation Engineering, 3 credits.
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 budget.

506. Clinical Chemistry, 2 credits. Prerequisite: Path 481, Biochem 301, or equivalent courses. 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.

507. Immunohematology, 2 credits. Prerequisite: Micro 329, 529 or consent of instructor. A detailed study of the blood groups of man and laboratory aspects of blood banking with special reference to theoretical and clinical applications.

510. Erythrocytes in Health and Disease Laboratory, 1 credit. Prerequisite: Path 325, 481, 502 or consent of instructor. 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.

511. Leukocytes in Health and Disease Laboratory, 1 credit. Prerequisite: Path 325, 481, 503 or consent of instructor. 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.

512. Immunohematology Laboratory, 1 credit. Prerequisite: Path 507, 481, Micro 328 or consent of instructor. 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.

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 Fischer (Graduate Director), Ganje, Holden, Kraidy, Rakow, Rendahl, Shafer, Tovares

Program Description

The School of Communication offers the Master of Arts degree (thesis and non-thesis options) with a major in Communication. The Master of Arts prepares students for careers in academia, public service, and industry. The program can be tailored to individual student needs with the help of an advisor. Although the program is designed for students with undergraduate degrees in communication, persons with background in related fields in the humanities or social sciences are encouraged to apply.

The focus of the M.A. program is “Communication, Community, and Technology.” Within this broad framework, the course work and faculty interaction enable students to investigate in a critical and scholarly manner the most important contemporary communication issues, while preparing themselves as communication professionals or academics. Students are prepared to undertake research projects addressing innovations in communication technologies and their local, national, and global impacts; the role of mass communication in diverse societies; the acculturation and socialization functions of communication; interpersonal and small group communication; international communication and national development; historical development of mass media and public media; public opinion and popular culture; communication and cultural diversity; and communication and gender roles.

Admission Requirements

1. Graduate Record Examination General Test.
2. Completion of the equivalent of 20 undergraduate credits in speech communication and/or mass communication, including at least 12 upper division credits.

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 major of at least 20 credits in communication for the thesis option or 22 credits for the non-thesis option.
3. Minor or cognate of at least 9 credits.
4. Written and oral final examinations. Thesis option M.A. candidates will defend their theses in the final oral examination. Non-thesis option M.A. candidates will be expected to defend and discuss their independent study reports and two term papers or projects completed in any course on their program of study during the final oral examination. The director of Graduate Study will appoint three-person examining committees from the Graduate Faculty, normally drawn from the School of Communication, chaired by the advisor to conduct the final oral examination for non-thesis students. The Advisory Committee will conduct the final oral examination for thesis students.

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.


520. Seminar: Rhetorical Theory and Criticism, 3 credits. Directed analysis and discussion of methods of rhetorical theory and criticism from classical through modern times.

525. Seminar: Interpersonal and Small Group Communication, 3 credits. Study of communication in dyads, triads, and small groups with attention to methods for exploring issues in interpersonal and small group communication.

540. Seminar: Organizations 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. Seminar: Public Opinion and Propaganda, 3 credits. Study of mass media, political communication, and interpersonal influence. Consideration of social change with attention to results of attitude and opinion research.

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.

301. Psychology of Communication, 3 credits.
310. Communication and Diversity, 3 credits.
327. Editorial Photography, 3 credits.
401. Organizational Communication, 3 credits.
402. International/Intercultural Communication, 3 credits.
403. Community Relations, 3 credits.
404. Advertising and Society, 3 credits.
405. Social Implications of the Information Society, 3 credits.
406. Media Consequences and Effects, 3 credits.
407. Communication Technologies and the Future, 3 credits.
412. Communication Law, 3 credits.
428. History of American Journalism, 3 credits.
444. Advanced Advertising Production, 3 credits.
461. Rhetoric of Campaigns and Movements, 3 credits.

Communication Disorders

(See Speech-Language Pathology)
Computer Science

Professors Ali (Chair), Dai, Flannery, Maxwell, O’Neil (Graduate Director), Valeroso, Wiggan

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 Center for Aerospace Sciences which provides unique opportunities for research by faculty and graduate students. There is especially strong interest within the department in the areas of artificial intelligence, compiler design, database, graphics, networks, operating systems, simulation, theoretical computer science, and vision.

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.

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, including either 522 or 575:
   - CSci 512 Advanced Data Structures
   - CSci 522 Theoretical Foundations I
   - CSci 536 Compiler Design, or
   - CSci 575 Analysis of Algorithms
2. Two courses from the list below, including either 551 or 580:
   - CSci 513 Database Management System Design
   - CSci 551 Operating Systems
   - CSci 555 Computer Networks, or
   - CSci 580 Computer Organization

Applied Computing Track

(non-thesis option, 32 credit hours)

1. The core of required courses (12 credits).
2. Four or five elective courses (12-15 credits), including a 3-course specialization approved by the student’s Independent Study Advisor.
3. CSci 566 Applied Computing Project (3-6 credits), defined in consultation with the student’s Independent Study Advisor.
4. CSci 997 Independent Study (2 credits), a complete write-up of the Applied Computing Project.
5. 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 566 May not be used as an elective.
4. Successful completion of a written comprehensive examination on the areas covered in the core courses selected by the student, required only if the study receives a grade lower than “B” in some core course.
5. A final oral examination, which includes a defense of the thesis.

Courses

501. Topics in Computer Science, 1 to 3 credits. Prerequisite: Consent of instructor. Selected topics from current developments in Computer Science.
512. Advanced Data Structures, 3 credits. Prerequisite: CSci 351. Analysis of data structures and file organization based on graph-theoretic models. Topics include: list management, tree traversal, sorting and searching, multi-linked and non-planar structures, and storage considerations.
543. Expert Systems, 3 credits. Prerequisite: CSci 365 or CSci 384. A study of the design and application of rule-based systems. Topics will include knowledge engineering, architecture of rule-based systems, inference techniques, uncertainty, knowledge representation, languages and shells, and verification of rule-based systems. A significant portion of the class will be the development of two small systems with different languages.
546. Advanced Computer Graphics, 3 credits. Prerequisites: CSci 446, Math 213. An introduction to current technology and techniques for support of graphics. Included are geometric transformations of two- and three-dimensional displays, shadowing, windowing, clipping, fractals, animation, visualization, user interfaces, real-time graphics, and consideration of display devices.
551. Structure of Operating Systems, 3 credits. Prerequisites: CSci 322, 451. A detailed study of the process model of operating systems. Topics include: structure of the operating system kernel; resource creation, identification, and management; deadlock avoidance, detection, and recovery; virtual storage; virtual machines; mathematical modeling of operating systems; performance measurement and evaluation.
555. Computer Networks, 3 credits. Prerequisite: CSci 327. A study of network architectures and communication protocols. Broadband and baseband technologies will be considered including SNA, X.25, Ethernet, and other LAN protocols.
565. 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. Applied Computing Project, 3 to 6 credits. Prerequisite: CSci 463 or CSci 565. The complete development of a useful software product, including specifications, design, implementation, coding, testing and verification. Students may work in teams. The project is supervised by the students’ 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.
580. Principles of Computer Organization, 3 credits. Prerequisite: CSci 322. An overview of organization of computer systems. Topics include system modularization and performance, processors, control units, instruction sets, memory organization, and the design of multiprocessor machines.
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.
411. Information Systems, 3 credits.
445. Modeling and Simulation, 3 credits.
446. Computer Graphics, 3 credits.
452. Operating Systems II, 3 credits.
455. Database Management Systems, 3 credits.
463. Software Design with ADA, 3 credits.
465. Principles of Translation, 3 credits.
472. Seminars in Computer Science, 1 credit.
Counseling

Professors Barké (Chair), Henly, Henry, Jacobs, Juntunen, Simms, Twohey

Program 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. Completion of the M.A. program partially fulfills requirements for certification as a School Counselor or licensure as an Addiction Counselor in North Dakota. The Ph.D. in Counseling Psychology can lead to licensure as a Psychologist in North Dakota, as well as other states.

Master of Arts

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, junior high, or high schools.

Admission Requirements

1. Twenty semester credits of course work in the behavioral sciences at the undergraduate level, which must include 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 based on achievement in undergraduate work, satisfactory performance on the Miller Analogies Test, and favorable recommendations.

Degree Requirements

1. Forty-eight (48) semester credits.
2. A core curriculum, which constitutes the emphasis in Community Agency Counseling.
3. Additional emphasis options:
   - School Counseling. Students pursuing certification as school counselors in North Dakota must hold or be eligible for teacher certification and must complete COUN 505, COUN 522, and EFR 500.
   - Rehabilitation Emphasis. COUN 565 and four Social Work rehabilitation courses recommended as a cognate.
   - Addiction Counselor Emphasis. COUN 565 and COUN 900. To qualify for state certification students must complete a 15 hour cognate in addiction related fields (Psychology, Pharmacy, Sociology) and a 9 month clinical practicum at an approved addiction treatment facility.

   Students may enroll in the counseling practicum (COUN 580) after they have satisfactorily completed at least twelve credits in the program including COUN 510, Counseling Methods, and COUN 512, Methods Lab. After successfully completing practicum, students will enroll in COUN 584: Internship in Counseling, which is a two-semester, half-time (20 hours/week), 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 course work for the degree, students are eligible to sit for the Masters Comprehensive Examination, which is offered once each semester. A passing grade on the examination is required for graduation.

   Prerequisites: 20 hours of Behavioral Sciences, including Abnormal Psychology, Statistics, and Developmental Psychology.

Required Core Course Work:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COUN 505</td>
<td>Counseling in Community Agencies (or COUN 505)*</td>
<td>2</td>
</tr>
<tr>
<td>COUN 510</td>
<td>Counseling Methods</td>
<td>3</td>
</tr>
<tr>
<td>COUN 512</td>
<td>Counseling Lab</td>
<td>2</td>
</tr>
<tr>
<td>COUN 515</td>
<td>Methods of Research</td>
<td>3</td>
</tr>
<tr>
<td>COUN 516</td>
<td>Research Lab</td>
<td>1</td>
</tr>
<tr>
<td>COUN 517</td>
<td>Psychological Testing</td>
<td>3</td>
</tr>
<tr>
<td>COUN 518</td>
<td>Group Dynamics</td>
<td>3</td>
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<tr>
<td>COUN 519</td>
<td>Career Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 530</td>
<td>Counseling Personality and Development</td>
<td>3</td>
</tr>
<tr>
<td>COUN 531</td>
<td>Women’s Psychological Development</td>
<td>3</td>
</tr>
<tr>
<td>COUN 532</td>
<td>Multicultural Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 533</td>
<td>Marriage and Family Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 580</td>
<td>Practicum</td>
<td>6</td>
</tr>
<tr>
<td>COUN 584</td>
<td>Internship (2 semesters, 4 credits each)</td>
<td>8</td>
</tr>
<tr>
<td>COUN 997</td>
<td>Independent Study</td>
<td>2</td>
</tr>
</tbody>
</table>

TOTAL SEMESTER CREDIT HOURS: 38

*Students in School Counseling will take COUN 505 instead of COUN 503.

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 prepares students to sit 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 Department is committed to diversity, particularly to training for Native Americans, and Native American mental health issues.

Admission Requirements

1. A master’s degree in counseling, psychology or a related field.
2. 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.
3. Eighteen (18) semester credits of undergraduate psychology including course work in general psychology, developmental psychology, abnormal psychology, experimental and research methods, and statistics.
4. Graduate Record Examination—General and Psychology Subject tests.

Students are selected on the basis of undergraduate GPA, masters degree GPA, 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, and career goals. Doctoral graduates from a recent four year period have had the following average grades and scores: undergraduate GPA 3.21, master’s GPA 3.77, GRE-V 566, GRE-Q 542, GRE-A 565, and GRE Psych 569. 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 course work in the following areas: biological bases of behavior, cognitive/affective 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.

Cognate in Counseling

A cognate in the Department of Counseling, consisting of a minimum of 9 semester credits of counseling course work may be taken by master’s or doctoral students in related fields. Cognate course work 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 formal minor in Counseling below.

Minor in Counseling

A minor in the Department of Counseling consisting of a minimum of 20 semester credits of counseling course work may be taken by master’s or doctoral students majoring in a related field. Such a minor should include the following five courses: 510, 512, 517, 519, and 530. 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.

Courses

503. Counseling in Community Agencies, 2 credits. An introduction to counseling practice and services in mental health and other community agencies. Includes an examination of service population characteristics and treatment needs, diagnostic systems, intervention strategies, ethical standards, professional issues, and related topics.
505. School Counseling, 3 credits. Examines principles of child and adolescent development and how those principles influence school counseling practice in elementary, junior high and high school settings. Includes consideration of the counselors’ roles in dealing with personal and crisis problems of students. Professional relationships, ethical and legal issues are addressed.
510. Counseling Methods, 3 credits. Two training components are combined to provide an intensive practicum experience: a didactic component introduces the basic skills of effective interpersonal communication; participation in the co-requisite laboratory (COUN 512) provides practice in the practical application of those skills in simulated counseling interviews.
512. Counseling Methods Laboratory, 2 credits. Designed to accompany COUN 510, this laboratory provides an opportunity for graduate students in counseling to practice basic counseling skills under supervision. Role-play counseling sessions are conducted, with live observation, video-taped review and feedback from peers and supervisors. First enrollment must be concurrent with COUN 510. Repeatable to 4 credits.
515. Methods of Research, 3 credits. Methods and procedures of research development, design and statistical analysis related to counseling and behavioral science. Experience in formulating, developing and implementing an individual research project.
516. Counseling Research Laboratory, 1 credit. Introduces basic procedures in analysis of counseling research data. Topics including data coding, data entry and use of statistical packages are presented in an individualized manner. Repeatable to 2 credits.
517. Psychological Testing, 3 credits. The application of principles of psychological measurement to selected instruments in the areas of intellectual functioning and aptitudes; educational and occupational achievements; career interests; and personality. Development of test interpretation skills.
518. Group Dynamics, 3 credits. Addresses the principles and practices of social and therapeutic groups. Includes study of professional issues relevant to group processes. Involves participation in in-class group experiences.
522. Management of School Counseling Programs, 2 credits. Study of the organization and administration of counseling programs in school settings, including foundations of program development and evaluation. Characteristics of effective school counselors. Consideration of professional and ethical concerns in school counseling.
530. Counseling, Personality and Development, 3 credits. Systematic study, analysis and role-played practice of counseling techniques and interventions. Includes an examination of the role of different theories in counseling interventions, demonstration and practice of theoretically based counseling interventions, research evidence, and coverage of professional issues.
531. Women’s Psychological Development, 3 credits. Students will examine current trends in psychological development theory as they pertain to women. The focus of the course is on theory. Common issues of concern to women (e.g., depression, eating disorders, and abuse) and related treatment strategies will also be addressed. 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. Marriage and Family Counseling, 3 credits. Prerequisite: COUN 510, or instructor approval. An introduction to the major theories of marriage and family counseling and their associated interventions. A combination of readings, lecture, discussion, demonstrations and role-plays will be used.
534. Career Counseling Theories, 3 credits. Prerequisite: COUN 510 or equivalent; admission to doctoral program. A critical examination of the rationales, construction, and uses of structured personality tests and interest inventories, including current views of test validities and reliabilities, prediction models, and related occupational techniques.
535. Advanced Psychological Testing, 3 credits. Prerequisite: COUN 517 or equivalent; admission to doctoral program. A critical examination of psychological research issues in Counseling Psychology and their relationship to practice. Students will further develop and demonstrate skills necessary to conduct the science of Counseling Psychology, including problem conceptualization, study design and the writing of proposals.
536. Ethics and Professional Issues in Counseling Psychology, 3 credits. Study and analysis of the ethical, legal and professional issues in Counseling Psychology. Understanding and application of APA Ethical Guidelines. Professional issues include the history and development of Counseling Psychology as a profession, issues of professional identity, and current trends affecting the field.
537. Research Issues in Counseling Psychology, 3 credits. This seminar is designed to increase students’ self-efficacy and ability to examine critically research issues in Counseling Psychology and their relationship to practice. Students will further develop and demonstrate skills necessary to conduct the science of Counseling Psychology, including problem conceptualization, study design and the writing of proposals.
538. Counseling, Personality and Development, 3 credits. Systematic study, analysis and role-played practice of counseling techniques and interventions. Includes an examination of the role of different theories in counseling interventions, demonstration and practice of theoretically based counseling interventions, research evidence, and coverage of professional issues.
539. Research Issues in Counseling Psychology, 3 credits. This seminar is designed to increase students’ self-efficacy and ability to examine critically research issues in Counseling Psychology and their relationship to practice. Students will further develop and demonstrate skills necessary to conduct the science of Counseling Psychology, including problem conceptualization, study design and the writing of proposals.
540. Supervision Theory and Technique, 3 credits. A survey and critical examination of approaches, techniques and issues in providing supervision to counselors-in-training. Includes reading of current theory and research on supervision, critical analysis of approaches to supervision, demonstrations, and role-played experiences of different supervision techniques.
541. Practicum in Supervision, 1-3 credits. Prerequisites: COUN 560. Supervised experience in providing supervision to counselors-in-training. Experience may be gained in supervising beginning students in role-played labs, live supervision in practicum, individual supervision, and/or small group supervision of interns. May be repeated up to 6 credits.
545. Professional Seminars, 1 to 3 credits. Prerequisite: consent of instructor. Seminars are designed to present current research and supplement course work in several areas. May be repeated up to eight credits. S/U grading only.
547. Assessment of Cognitive Abilities and Personality, 4 credits. Theory, research evidence, and practice in the administration, scoring, interpretation and use of assessment instruments in the practice of Counseling Psychology. Special attention will be paid to issues of race, ethnicity, gender, age and disability in the use of these instruments. A 2-hour lab provides supervised practice in test administration and scoring.
549. Counseling Psychology Research Practicum, 1-3 credits. This course involves student participation in one of several topical research groups conducted by faculty on an ongoing basis. Groups will design and carry out research studies, and prepare manuscripts for publication or presentation. May be repeated up to 8 credits. S/U grading only.
550. Counseling Practicum, 3 credits. Introduction to counseling practice. Emphasis on development, improvement, and evaluation of counseling relationships. Interview skills in supervised counseling practice in a variety of settings including elementary and secondary schools, industry, mental health settings, and other approved agencies. S/U grading only.
553. Field Work, 3 credits. Prerequisite: admission to doctoral program. Participation in the activities of a counseling agency. Continued development of counseling and consultation skills with individuals, couples, and groups. Participation in in-class group and individual supervision conducted by faculty on an ongoing basis. Groups will design and carry out research studies, and prepare manuscripts for publication or presentation. May be repeated up to 6 credits. S/U grading only.
558. Internship in Counseling, 4 credits. Prerequisite: Counseling 580. Professional practice in counseling, assessment, consultation, teaching, or research in an approved agency. Supervision must meet criteria established by the department and the Graduate School. S/U grading only.
560. Problems in Counseling, 1 to 3 credits. Supervised independent study of selected problems in the counseling field. S/U grading only.
563. Readings in Counseling, 1 to 3 credits. Reading in selected areas of counseling. May be repeated up to six credits. S/U grading only.
596. Continuing Enrollment, 1 to 12 credits.
597. Independent Study, 2 credits.
598. Thesis, 4 credits.
599. Dissertation, 1 to 12 credits.
EDUCATION

Professors Ahler, Backes, Baker Big Back, Barrentine, Bass, Chalmers, Clark, Dahl, Fuller, Gersham, Guy, Hanhan, Harris, Hoover, Kelley, Knowlton, Landry, Laycock, Lemon, Olsen, Olson, Parker, Piper, Rice, Shaeffer, Strackbein, Strathe, Uhlenberg, J. D. Williams

Graduate programs in Education are housed in three departments of the College of Education and Human Development. Faculty in the Departments of Educational Foundations and Research, Educational Leadership, and Teaching and Learning work closely together in design and delivery of the graduate programs described in this section. The department chairs and program coordinators are listed below.

DEPARTMENT CHAIRPERSONS

Educational Foundations and Research.........R. Landry
Educational Leadership .................................G. R. Bass
Teaching and Learning.................................L. Chalmers

PROGRAM COORDINATORS

Early Childhood Education ..........................S. Hanhan
Educational Administration ..........................G. R. Bass
Elementary Education .................................S. Barrentine
Education, General Studies ..........................K. Gersham
(for educators of adolescents and adults)
Reading Education .................................D. Strackbein
Special Education .................................D. Knowlton
Teaching and Learning .................................M. Harris

Graduate programs in education at UND are accredited by the National Council for the Accreditation of Teacher Education (NCATE) through 2002, and those leading to teacher certification or endorsement or to an advanced educator credential are approved by the North Dakota Education Standards and Practices Board and the North Dakota Department of Public Instruction as appropriate.

DESIGN OF GRADUATE PROGRAMS: CRITICAL INQUIRY

The College of Education and Human Development admits to advanced programs for educators students who are self-directed learners with considerable experience in the practice of education. Viewing knowledge as holistic, interconnected, and never fully defined, we encourage students to define their own programs of study within the framework of critical inquiry.

Critical inquiry begins as students, individually or in groups, identify and seek resolution to problems in education. Students engaged in critical inquiry observe and try to understand differences in proposed resolutions to problems; explore problem situations and the consequences of various resolutions; seek further definition of issues through reading, interaction, research, and creative activity; and further professional abilities consistent with their own understandings of directions for policy and practice in education. Foundational studies in education and the study of research methodologies contribute to student’s ability to engage in critical inquiry.

Goals which inform all graduate programs for educators 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 pages 172 and 173 of this Catalog for 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.

PROGRAMS OFFERED

Program Degrees Available
Early Childhood Education M.S. 194
Educational Administration M.Ed., M.S., Ed.S., Ed.D., Ph.D. 192
Education-General Studies M.S. 195
Elementary Education M.Ed., M.S. 195
Reading Education M.Ed., M.S. 195
Special Education M.Ed., M.S. 196
Teaching and Learning Ed.D., Ph.D. 196

DEGREES OFFERED

The Master of Education (M.Ed.) and the Education Specialist (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 page 168 of this catalog for a discussion of M.Ed. requirements and to page 170 for a discussion of requirements for the Specialist Diploma.

The Master of Science (M.S.) degrees offered in education admit students who are 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 focused on educational theory. Refer to pages 172 and 173 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).
3. Applicants for specialist or doctoral programs are expected to supplement their portfolios with additional materials which represent their abilities, such as:
   a. Any published writing, even if the material does not address educational issues;
   b. A detailed description and analysis of a day in a classroom or other professional setting;
   c. A personal interview (This is a structured interaction and is an open option 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).

Each student admitted to one of the graduate programs in Education will be assigned a temporary advisor. As soon as possible after enrollment, 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.

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.

The specific admission requirements for each of the graduate programs in education are described with 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 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 course work in the appropriate scholarly tool area(s) or by a proficiency examination. A minimum of five semester credits in appropriate course work for the M.S. degree is required.

There is no scholarly tool requirement for the M.Ed. or Ed.S. degrees.

The following guidelines for doctoral students admitted to their programs after January 1, 1996, are advisory for previously admitted students.

For the Ph.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 520 Advanced Qualitative Research Methods (3 semester credits), and EFR 516 Statistics II (3 semester credits), and one of the following: EFR 517 Advanced Research Seminar-Experimental Design (3 semester credits) or their equivalents.

**Option 2:** Quantitative emphasis option: EFR 516 Statistics II (3 semester credits), and one of the following: EFR 511 Curriculum Evaluation (3 semester credits), EFR 590 Field Methods (1 semester credit), EFR 520 Advanced Qualitative Research Methods (3 semester credits) or their equivalents.

**Option 3:** Tests and measurements option: EFR 511 Curriculum Evaluation (3 semester credits), EFR 520 Advanced Qualitative Research Methods (3 semester credits), EFR 516 Statistics II (3 semester credits), and EFR 517 Advanced Research Methods (3 semester credits) or their equivalents.

The student’s advisory committee may approve an exception to these 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 Methods (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 Methods (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 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.

**THESIS AND INDEPENDENT STUDY REPORTS**

All master’s degrees and the Ed.S. culminate in a final paper or project. The thesis in the Master of Science degree earns 4-6 credits. Both the Master of Education and the Master of Science (non-thesis) degrees require a 2 credit independent study instead of a thesis. The independent study requirement may be met by completing a formal master’s paper, but other culminating projects may be approved such as the development of curriculum materials, simulation activities, films or videotapes. All theses, independent study reports, or other final degree requirement projects must be based on an approved proposal and must include a written summary, a bibliography, and an abstract.

**COMPREHENSIVE EXAMINATIONS**

Successful completion of a comprehensive examination is required of all graduate students. The comprehensive examination provides an opportunity to integrate information and experience gained during the program of study. Master’s and Specialist Diploma students take comprehensive examinations in the semester during which graduation is expected. Candidates take comprehensive examinations after making formal application to receive the Master’s or Specialist’s degree and having been notified of eligibility in writing by the Graduate School. Doctoral students take comprehensive examinations when most of the course work toward the degree has been completed and eligibility has been certified through formal application to the Graduate School. Comprehensive examination in the Foundations of Education is required of all students in Ed.D. programs, and a comprehensive examination in Educational Research is required of all students in the Ph.D. program in Teaching and Learning.
COURSES OFFERED

Courses focusing on Higher Education are offered by faculty in each of the three education departments. Offerings in higher education are coordinated by M. Olson. Work in Higher Education may be incorporated into the major of certain degree programs or comprise a cognate to support a graduate major.

Department of Educational Foundations and Research

The Department of Educational Foundations and Research provides programs for educators and other professionals interested in educational foundation, educational evaluation, and/or educational research. The department is committed to the encouragement of interdisciplinary efforts and to increased understanding of our multicultural society.

The department cooperates with the Department of Teaching and Learning in offering an M.S. in Education—General Studies and doctoral work in teaching and learning with an emphasis in research methodologies. See the descriptions under Teaching and Learning for the details related to these programs. Students are admitted to these programs following procedures established by the college.

Courses Offered

500. Foundations of Educational Thought. 3 credits. A problem-centered class dialogue on those philosophical concepts of educational thought which have shaped the development of the learning experience.

501. Psychological Foundations of Education. 3 credits. A study of the learning process with secondary emphasis on how the learning process is affected by individual differences, growth and development, and personality. A background in undergraduate Educational Psychology is assumed.

502. Issues and Trends in Education. 3 credits. Prerequisite: EFR 500 or permission of the instructor. The object of this course is to discover the causative and evolutionary factors giving birth to contemporary issues and trends in education.

503. Historical Foundations of Education. 3 credits. An historical examination of the concepts of the meaning, nature, process, and purposes of education as evolved in different historical periods and societies with emphasis on the scholars, ideas and changing institution.

504. Philosophical Foundations of Education. 3 credits. A study of the representative schools of philosophic thought which have structured major philosophies of education.

505. Social Foundations of Education. 3 credits. The study of schools and education in social context.

506. Multi-Cultural Education. 3 credits. Examination of the pluralistic character of American society and of the educational responses to this diversity.

507. Gender and Education. 3 credits. Gender and Education is a critical feminist analysis of the history, philosophy, theory, curriculum, and practice of education. We begin by examining gender as a social construct and its effects on boys and girls in classrooms, peer groups, communities, and at home. Teachers’ beliefs and practices are presented for analysis and current educational philosophy that integrates public and private spheres, productive and reproductive curriculum are evaluated. Post-modern and structuralist feminist theory and elements of critical theory are applied to the deconstruction of current narratives perpetuated in classroom practices.

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 Education Research. 3 credits. An introduction to the research methodologies used in study education. Special emphasis is on statistical, experimental and quantitative as well as naturalistic and qualitative types of research. The paradigms of both types of research will be contrasted and the application of the methodologies in actual research investigated.

510. Qualitative Research Methods. 3 credits. The study of philosophy, studies of qualitative research. Students are required to do a limited ethnographic study in an educational setting.

511. Curriculum Evaluation. 3 credits. A study of the theoretical models of curriculum 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 Education. 2 credits. Prerequisites: EFR 515 (or concurrent) or consent of the instructor; basic skills in programming. A study of large scale computer system applications, usually involving relatively large data sets on mainframe (or other computer sharing device) applications including data file management. Becoming familiar with existent computer sharing systems-language is necessary.

514. Small System Computer Applications in Education. 3 credits. A study of small computer system applications to education, current and potential, including computer-assisted instruction, models, the computer as an educational tool, design factors, and the impact of computing on the educational and social environment.

515. Statistics I. 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.

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. Previous or concurrent involvement in research is highly desirable.

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. The study of philosophy, principles and practices in the field of non-statistical inquiry. Examines several case studies of qualitative research. Students are required to do a limited ethnographic study in an educational setting.

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 topic change.

584. Internship in Education Research. 1 to 8 credits. Prerequisites: Appropriate foundational, cognate, and major area course work and consent of the advisor and instructor. This is a culminating experience primarily for sixth year and Doctoral students. 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

The mission of the Department of Educational Leadership is to prepare educational leaders to serve with vision, integrity, and skill in elementary and secondary schools in the state, the region, and beyond. A secondary mission of the Department is to prepare educational leaders for other administrative positions in educational organizations and agencies, particularly in institutions of higher education. A tertiary mission of the Department is to prepare leaders for positions in non-educational settings such as medical and social service organizations.

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. degree, a student
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.

Education Specialist

The Ed.S. program, available at UND only in Educational Leadership, is designed for students preparing for school administrative positions. The Ed.S. is usually completed to be a terminal program or advanced preparation for professional practice. Upon completion of the Ed.S., 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 students preparing for school administration positions including elementary or secondary principalships, superintendencies, curriculum directorships, or other school district central office positions. Other students may be planning to teach in the field of educational leadership, to serve in administrative positions with state education agencies, or to provide leadership in other educational or non-profit organizations. 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 administration is not generally sought by applicants for this degree, many of whom aspire to leadership positions in institutions of higher education, in government agencies, or in other educational policy organizations. Admission to the Ed.S., Ed.D., or Ph.D. will require completion of a master's degree normally in educational leadership or a closely related field. Each student in the Ed.S., Ed.D., or Ph.D. program is expected to choose one primary area of emphasis from Leadership and General Administration, Management of Resources, or Curriculum and Instruction. This choice will be made at the time the program of study is planned and approved by the student’s Faculty Advisory Committee. The residence requirement for the Ed.S. program is full-time enrollment for one summer session or one semester on the University of North Dakota campus. The residence requirement for the Ed.D. and Ph.D. programs is full-time enrollment for two consecutive semesters (fall-spring or spring-fall) on the University of North Dakota campus (see page 164 of the Catalog for a definition of residence).

For information about admission, program of study, residency, or other degree requirements, please contact the chair of the Department of Educational Leadership.

Courses

500. Educational Administration Foundations. 3 credits. Includes such topics as the organization and responsibility for education in the United States at the federal, state, and local levels; basic administrative theories, processes, and techniques; and major areas of concern in the operation of local schools.

501. Leadership, Planning, and Organizational Behavior. 3 credits. This course provides school leaders with preparation in skills for providing purpose and direction for individuals and groups, shaping school culture and value, facilitating the development of shared strategic vision for the school, formulating goals and planning change efforts with staff, and setting priorities for one’s school in the context of community and district priorities for student 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 levels.

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 and values.

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; draw inferences for program revisions; interpret and understand research, measurements, and evaluations; relate programs to desired outcomes; develop equivalent measures of incompetence; and design accountability mechanisms.

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, and write the necessary documentation to evaluate and implement a curriculum that meets the needs of the student. Furthermore, the school leader will have a framework for instruction, align curriculum with anticipated outcomes, monitor social and technological developments as they affect curriculum, and adjust content 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. Courses 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, institutional 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 at the federal, state, and local levels; basic administrative theories, processes, and techniques; and major areas of concern in the operation of local schools.

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, strategies and approaches 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 manifest a sensitivity to issues of diversity in a pluralistic society.

521. Administration and Supervision in Elementary Schools. 4 credits. Leadership responsibilities and techniques for elementary principals. Includes topics such as instructional improvement, supervision, evaluation, administrator-staff-student relationships, communication, public relations, planning, and business affairs at the building level in elementary schools.

522. Administration and Supervision in Secondary Schools. 4 credits. Leadership responsibilities and techniques for secondary school principals. Includes topics such as instructional improvement, supervision, evaluation, 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 survey.

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.

525. Educational Resources. 2 credits. A study of the legal basis for and the involvement in the funding of education by the federal, state, and local levels of government.

526. Educational Finance. 2 credits. An analysis of the business function of school districts with emphasis placed on budget development, purchasing practices, capital entity management, and policy development.

527. Educational Law I. 3 credits. The initial survey course in educational law concerning building-level issues. Includes topics such as religion and the public schools, tort liability, students' rights, and the handling of student records. Some consideration is given to processes of legal research in education.

528. Educational Law II. 2 credits. An advanced course in educational law at the district level. Includes topics such as state and federal relationships, school boards, school finance laws, contracts, teachers' rights, and tort liability of school districts and officers. Consideration is given to legal research and school 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, practitioners, parents, and advocates on topics including: student records, discipline, related services, due process, least restrictive environment, and appropriate education.

531. Seminar in Superintendency, 1 credit. Prerequisite: Master’s degree or permission of instructor. A study of concerns and issues related to administration at the district level. Involvement of practicing administrators and visits to schools provide clinical and practical elements. Attention to such issues as board relations, staff relations, and fiscal management problems.

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 negotiation.

541. Introduction to Higher Education Administration, 3 credits. An overview of administration 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 professions of administrator.

551. 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 administrator.

552. Higher Education Law, 2 credits. An overview of the legal issues that confront 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.

553. Higher Education Policy and Finance, 2 credits. An overview 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.

559. Seminar in Higher Education Administration. 1 to 4 credits. SU/grading only.

570. Microcomputer Applications in Educational Leadership, 2 credits. Students will develop an understanding of and skill in using the microcomputer as a tool for dealing with administrative procedures, problems, and decision-making in education. There will be hands-on experience with three kinds of user programs, viz., a word processor, a database system, and a spreadsheet as well as integrated use of these software systems.

571. School Community Relations, 2 credits. Study of the responsibility of classroom, attendance unit, and district personnel in public information efforts; design, use, and analysis of surveys; study of involvement of parents and other community members in resource, advisory, and decision-making activities; preparation of news releases and public information materials; study of relationships to media personnel.

572. Educational Systems and Planning, 2 credits. A study of the planning process including topics such as establishing goals; assessing needs; identifying resources; and generating, analyzing, and selecting alternatives. Processes and techniques in planning will be emphasized.

573. 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 innovation; motivation and morale; interpersonal relations and conflict management; small-group processes; and personality, values, and ethics.

574. Administration and Organizational Behavior II, 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.

591. Practicum in Educational Leadership, 1 to 4 credits. Prerequisites: Appropriate foundational and major area courses, and consent of the instructor and advisor. Practicum in study of desirable school practices, observations in nearby schools, and application of research findings in solving practical problems. May be repeated.

593. Internship in Educational Leadership, 1 to 8 credits. Prerequisites: Appropriate foundational, cognate, and major area course work and consent of the advisor and instructor. This is a culminating experience primarily for educational specialist 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.

Department of Teaching and Learning (T&L)

The Department of Teaching and Learning organizes programs for preparation and professional development of teachers and teacher educators at the bachelors, masters, and doctoral levels. 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

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<th>Program</th>
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<td>Education: General Studies</td>
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See pages 190 through 191 under Programs in Education 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 2 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, Head Start programs, child development and child care centers, and other programs relating to the education of young children.

Admission Requirements

An undergraduate degree in early childhood education, child development, elementary education, or a related field.

Refer to page 160 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 on page 167. 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 developed together 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:

**Major:**  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>T&amp;L 526</td>
<td>Play in Development and Early Childhood Education</td>
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<td>T&amp;L 527</td>
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<td>T&amp;L 529</td>
<td>Language Development in Children</td>
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<tr>
<td>T&amp;L 523</td>
<td>Home-School Relations</td>
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<tr>
<td>T&amp;L 547</td>
<td>Young Children’s Thinking</td>
<td>. . . .2</td>
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<tr>
<td>T&amp;L 510</td>
<td>Early Intervention for Children with Special Needs</td>
<td>. . . .2</td>
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*Electives: The student will choose electives in consultation with his/her advisor or committee. Students considering leadership positions should take T&L 454. Students who have not had direct experience working with young children should take T&L 580 Practicum: Early Childhood Education. Students who have not had a course at the undergraduate level in comparative early childhood education should take T&L 455 Comparative Approaches to the Education of Young Children. If students do not have a teaching certificate, they are required to take EFR 500 Foundations of Educational Thought. Students can also take additional electives in Reading Education, Special Education, Social Work, Educational Administration, Women Studies or Counseling as deemed appropriate.

**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, seminars, 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.

Certified teachers with a bachelor’s degree in elementary 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 Certification for the M.Ed.
   - or
2. Teacher Certification or a baccalaureate degree for the M.S.

Refer to page 160 of this catalog for additional information on admission requirements and application procedures.

**Degree Requirements**

A detailed description of the M.Ed. degree may be found on page 168; a detailed description of the M.S. degree can be found on page 167. Scholarly tool requirements are described on page 191. Applicants should refer to page 160 and 161 for application procedures.

**Master of Education**

Certified persons are eligible for this degree. The major portion of the program includes course work that addresses practical aspects of teaching at the elementary school level—literacy development, mathematics, science, social studies, curriculum development, and working with families. A program of study may include some course work in Early Childhood Education or middle school education. 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 an independent study.

**Master of Science**

This degree is available in two tracks. Track I, either thesis or non-thesis, is open to certified or non-certified persons who wish to follow a research oriented program of study. Track I requires a minimum of five credits of scholarly tool course work 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 course work in Foundations of Education.

**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 language arts in a supervised practicum experience.

**General Studies**

**Program Description**

This M.S. degree program (thesis or non-thesis) is designed for both the certified 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 does not require, or lead to, teacher certification.

For certified teachers the major portion of the program of study must include 6 credits in foundations, 6 credits in curriculum and 5 credits in scholarly tools. For those who are not certified teachers, the major portion of the program of study must include 8 credits in foundations, 4 credits in curriculum and 5 credits in scholarly tools.

**Admission Requirements**

1. Teacher Certification
   - or
2. Minimum of 12 credit hours of undergraduate study in education.
3. Minimum of 8 credit hours of social sciences or humanities.

**Degree Requirements (for certified teachers)**

1. Six (6) credits in foundations.
2. Six (6) credits in curriculum.
3. Five (5) credits in scholarly tools.

**Degree Requirements (for those not certified)**

1. Eight (8) credits in foundations.
2. Four (4) credits in curriculum.
3. Five (5) credits in scholarly tools.

The minor or cognate for this degree must include academic course work which provides broad support for the major.
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. For the M.Ed., teacher certification at one of the following levels: elementary, middle or secondary education.
2. For the M.S., teacher certification (elementary, middle or secondary), or a baccalaureate degree in another field of study.
3. To meet requirements for the North Dakota Reading Credential, students pursuing the M.Ed. or M.S. must be certified teachers with two years of classroom teaching experience.

Refer to page 160 of this catalog for additional information on application procedures.

Degree Requirements

The M.Ed. degree in Reading Education requires course work in the theoretical and practical aspects of teaching and learning language and literacy. It is designed to enable elementary, middle, and secondary teachers to implement strong integrated language arts programs and to evaluate and improve pupil performance in reading/language arts. Related course work in language development, learning theory, and preschool curriculum is offered by the Elementary and Early Childhood Education program areas. The program culminates in an independent study. With careful planning students can meet the course requirements for the North Dakota Reading Credential and be certified as reading teachers.

The M.S. degree in Reading Education is available in two tracks. Track I, either thesis or non-thesis, is open to certified persons who wish to follow a research oriented program of study. Track I requires a minimum of five credits of scholarly tool course work 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 Reading Education at the graduate level. Track II requires a minimum of six credits of course work in Foundations of Education.

Special Education

Program Description

The graduate program in Special Education prepares teachers and consultants to work with individuals in one or more of the following areas: early childhood special needs, emotional disturbance, mental disabilities, specific learning disabilities and visual impairments. Students may complete course work to satisfy North Dakota’s requirements for a credential in Early Childhood Special Education, Visual Impairment, or the Educational Strategist with an endorsement in one or more of these disability areas: emotional disturbance, learning disabilities, mental retardation. Detailed descriptions of all programs including prerequisites and course sequences are available in the Special Education Office.

Teachers certified in Elementary Education, Middle School Education, or Secondary Education may pursue the Master of Education or the Master of Science degree. Individuals who will complete certification in Elementary, Middle, or Secondary Education by the time they complete their master’s degree in Special Education may also pursue the Master of Education or the Master of Science degree. Non-certified persons may only pursue the Master of Science degree. Certified individuals are eligible for employment in public school settings as well as in various agencies serving individuals with disabilities. Non-certified individuals are eligible for agency employment but not for public school positions.

Admission Requirements

1. Baccalaureate degree in education or in areas such as social work, communication disorders, nursing, or physical therapy.
2. For students with undergraduate degrees in other than education—
   a. Twelve (12) semester credits of undergraduate education
   b. Eight (8) semester credits of undergraduate study in social science or selected humanities prior to taking graduate level study in education.

Degree Requirements

The Master of Science (M.S.) degree is available in two tracks. The first track, with either a thesis or non-thesis option, is open to professional educators (certified) or non-certified persons who wish to follow a research-oriented program of study, and requires the inclusion of a minimum of five credits of scholarly tool course work (maximum of two credits of readings) in the program of study. The second track, available only in the non-thesis option, provides opportunity for non-certified persons to study Special Education at the graduate level, and requires the inclusion of at least six credits of course work in educational foundations. A detailed description of the M.S. degree requirements may be found on page 167; a detailed description of the Master of Education (M.Ed.) degree can be found on page 168. The scholarly tool requirements are described on page 191. Applicants should refer to page 160 and 190 for application procedures.

A doctoral degree in Teaching and Learning is available with a concentration in Special Education. Interested persons are referred to page 197 of this catalog.

Individuals interested in Special Education Administration may pursue this area of study through a Master of Education (M.Ed.), a Master of Science (M.S.), a Specialist Diploma, or a Doctorate program. At the master’s level for those pursuing special education administration, the major should be Special Education and the cognate or minor would be Educational Administration. At the Specialist or Doctoral level, the major would be Educational Administration, while the minor or cognate would be Special Education.

Teaching and Learning

(Doctoral Program)

Program Description

The Ph.D. and Ed.D. programs in Teaching and Learning are designed to prepare individuals for leadership and teaching positions in schools, colleges and universities, and government. Four major options are available in both degree programs: Elementary Education/Child Study, Secondary/Higher Education, Special Education, and Research Methodologies.

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.) are stated on p. 173 of this catalog, and requirements for the Doctor of Education (Ed.D.) are stated on p. 172.

Admission Requirements

See Graduate School requirements (p. 160) and Education requirements (p. 190).

Admission to the Ph.D. program in Teaching and Learning-Research Methodologies may occur after receipt of the bachelor’s degree.
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 secondary/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 credit hours for the degree, in elementary education/child study, secondary/higher education, special education, or research methodologies. The major coursework includes a dissertation of at least 10 credit hours.
2. A minor or cognate in a supporting area of at least 12 credit hours.
3. A minimum of six credit hours in the Foundations of Education.
4. A minimum of 10 credit hours of scholarly tools. Scholarly tools options for doctoral students in education are described on page 191.

Doctoral students in education complete a residency of at least two consecutive semesters, either fall and spring or spring and fall, on the University of North Dakota campus. The definition of residency of the Graduate School appears on page 164. Residency policies of the program are available on request.

#### Doctor of Education

The program of study shall include the following:

1. A major area consisting of a minimum of 58 credit hours in elementary education/child study, secondary/higher education, special education, or research methodologies. The major coursework includes a dissertation of 10 credit hours.
2. A minor or cognate in a supporting area of at least 12 credit hours.
3. A minimum of 12 credit hours in the Foundations of Education.
4. A minimum of six credit hours of scholarly tools. Scholarly tools options for doctoral students in education are described on page 191.

Doctoral students in education complete a residency of at least two consecutive semesters, either fall and spring or spring and fall, on the University of North Dakota campus. The definition of residency of the Graduate School appears on page 164. Residency policies of the program are available on request.

#### Major Options

##### Elementary/Child Study

The Elementary Study/Child Study option focuses on teaching and learning, the development of curriculum, and the study of children and young adolescents. The major area includes one to three components which focus on aspects of elementary or middle level education or the study of children, such as language and literacy learning, the teaching of science, personalizing learning experiences, or human relations education.

##### Secondary/Higher Education

The Secondary/Higher Education option focuses on issues of teaching and learning of older adolescents and adult learners with focus on the pedagogy of a particular content field. Half of the work of the major is devoted to study of the academic discipline of the student and half to the study of education. Core requirements for secondary and higher education students differ and include the following courses:

#### Secondary Education

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>T&amp;L 540</th>
<th>Curriculum and Instruction in the Secondary School</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Courses</td>
<td>T&amp;L 542</td>
<td>Improvement of Instruction in the Secondary School</td>
<td>(2)</td>
</tr>
<tr>
<td>Recommended Courses</td>
<td>T&amp;L 533</td>
<td>Reading in the Secondary School</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>T&amp;L 538</td>
<td>Supervision of Student Teachers</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>T&amp;L 571</td>
<td>Teacher Education</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>EFR 506</td>
<td>Multicultural Education</td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td>EFR 507</td>
<td>Gender and Education</td>
<td>(3)</td>
</tr>
</tbody>
</table>

#### courses

- **T&L 570** History of Higher Education in the U.S. (3)
- **T&L 539** College Teaching (2)
- **T&L 545** Adult Learners (2)

#### Recommended Courses

- **T&L 590** Higher Education Curriculum (3)
- **EDL 552** Higher Education Law (2)
- **T&L 571** Teacher Education (2)
- **EFR 506** Multicultural Education (3)
- **EFR 507** Gender and Education (3)

Ph.D. students entering doctoral study with a master's degree in the content field and without previous background in the study of education will complete a major concentrated entirely on the study of education and a minor or cognate of at least 20 credit hours in the content field.

#### Special Education

The special education option prepares special educators and persons in related human service disciplines for educational leadership as teacher educators, special service coordinators, consulting student advocates. Special education programs offered in the College of Education and Human Development address the needs of students identified as mentally disabled, learning disabled, emotionally disturbed, visually impaired, or having early childhood special needs. The special education option includes specified advanced coursework in special education and work in one or more of the areas listed above. The student is expected to include in the program the following courses or their equivalents.

- **T&L 551** Advanced Assessment/Special Needs Students (3)
- **T&L 552** Inclusive Methods (3)
- **T&L 553** Collaborative Relationships (2)
- **T&L 578** Behavior Management for Special Needs Students (2)
- **T&L 549** Seminar in Special Education (2)

#### Research Methodologies

The research methodologies option focuses on the study of quantitative and qualitative research in education. Students are prepared to become education researchers or teachers of research methodologies in education and related fields. In this major, half of the courses consist of work in research methodologies and half, of selected work in the study of education.

#### Courses

- **500. Education of the Visually Impaired.** 3 credits. A course which provides an overview of the field of visual impairment to include the following areas of emphasis: History/Philosophy, Service-delivery models; medical, psychological and educational implications of partial vision or total blindness; curricula methods and materials; current issues/trends.

- **501. Diseases and Function of the Eye.** 2 credits. A course which introduces students to: a) the structural parts of the eye and its functions; b) common ocular conditions and diseases and their implications for education; c) interpretation of medical eye examination reports; and d) special considerations for infant, school-age academic, multiply disabled, or adult populations.

- **502. Braille Reading and Writing.** 2 credits. In this course students learn: 1) to read and write the literary code of grade 2 braille and 2) to teach the literary code of grade 2 braille to students of all ages.

- **503. Orientation and Mobility/Visually Impaired.** 2 credits. This course introduces students to basic orientation and mobility techniques used by specialists when working with individuals with low vision and blindness. Concept development, kinesiology, tactile map construction, dog guides, electronic mobility devices and parental involvement are topics covered with respect to various populations (i.e. infants, school-age academic children, multiply disabled children and adults).

- **504. Communication Media and Methods/Visually Impaired.** 3 credits. Prerequisite: Consent of instructor. This course provides an overview of the communication devices and adaptive technology used by the visually disabled. Students learn to read and write the braille codes for mathematics and music. Do basic calculations on the abacus, braille and talking calculator and gain familiarity with computers and software currently used in the field.

- **505. Low Vision Assessment and Remediation.** 2 credits. Prerequisite: T&L 315 or consent of instructor. A course which focuses on children who have severe visual deficits but with proper training are able to utilize their vision for learning. Effects of low vision are studied with respect to psychological/sociological development, academic learning, skills of independent living, and vocational choice. Methods of assessing visual function are examined with emphasis on adaptions needed in the educational setting. Optical and non-optical aids are compared and evaluated.
510. Early Intervention for Children with Special Needs, 2 credits. An introduction to the field of Early Childhood Special Education, primarily for students interested in entering the field. Issues such as program design, parent involvement, identification, infant education, and effects of disabilities will be covered.

511. Identification and Assessment of Young Children with Special Needs, 3 credits. A study of the principles and procedures for screening, identifying and evaluating young children with special needs. Emphasis will be placed on exposing students to available assessment instruments and providing opportunities for actual testing of preschoolers.


513. Working with Families of Young Children with Special Needs, 3 credits. This course provides initial study of the impact of a child with special needs on the family. An overview of family systems theory and social network theory is included as they relate to families of children with special needs. Emphasis is placed on the development and implementation of family-centered services in early intervention programs.

514. Creative Expression in the Elementary School, 2 credits. Content, methods, and theories in the field of writing instruction at the elementary school level.

515. Science in the Elementary School, 2 credits. Curricula, content, and curricular performance standards for instruction at the elementary school level.

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.

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.


523. Home-School Relations, 3 credits. Prerequisite: Classroom experience or permission of instructor. A study of the experience of parenting and the needs of parents and how these relate to the establishment of working relationships between parents and teachers; an introduction to conferencing skills and basic counseling skills.

524. Reading in the Content Areas, 2 credits. Pre- or corequisite: 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 ways in which play is being incorporated in programmatic settings.

527. Curricular Foundations in Early Childhood Education, 3 credits. This course examines the historical, philosophical, cultural, race, class, and gender influences on curriculum in early childhood, including the philosophy and mission of the Department of Teaching and Learning.

528. Language Development in Children, 1 to 4 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, 3 credits. A study of developmental reading instruction. Emphasis is placed on teaching 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: CTL 530. A study of the reading process in the primary grades including essential factors of readiness for learning, teaching techniques, and approaches to beginning reading instruction.

532. Teaching of Reading in the Intermediate Grades, 2 credits. Pre- or corequisite: CTL 530. A study of the reading process in the intermediate grades with emphasis on the role of reading as a factor for learning.

533. Reading in the Secondary School, 2 credits. Pre- or corequisite: CTL 530. Development of reading-skills in the content subject areas and reading skill development in the classroom.

534. Basic Reading Diagnosis and Remediation, 2 credits. Prerequisite: CTL 530 or consent of instructor. Focuses on common causes of reading disability, methods of diagnosis, intensive reading programs in the classroom.

535. Advanced Reading/Language Arts Diagnosis and Remediation, 2 credits. Prerequisite: CTL 530 and 534. Analysis of interrelationships of learning difficulties in reading programs in the classroom.

536. Teaching and Supervision of Elementary Language Arts, 3 credits. Pre- or corequisite: CTL 530. Considers the objectives of the elementary language arts programs, methods of instruction, and recent 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, 2 credits.


543. The Junior High School, 2 credits. Philosophy, special functions, organization, and administration of the American Junior High School.

545. Adult Learners, 2 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.

547. 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.

548. Observational Research in Child/Case Studies, 3 credits. Students in this course will be introduced to several methods of observation used in case studies, and in particular, child studies. Issues that surround the use of observation in case study research involving the observation of children will be examined, especially as these issues relate to participant-observation of teacher-researchers.

549. 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 and/or emotionally disturbed theoretical backgrounds; models for delivery of service.


552. Inclusive Methods, 3 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, 2 credits. A course appropriate for anyone working with parents, general educators, special educators, paraprofessionals, related service personnel, and administrators. Topics covered include: (1) the various models of collaboration and consultation and the stages of each; (2) communication skills; (3) problem-solving; (4) conflict management; (5) diverse perspectives; (6) information collection procedures; and (7) supervisory skills.

570. History of Higher Education in the U.S., 3 credits. Study of major events and people shaping higher education in the U.S. Role, philosophy, and organization of institutions of higher education discussed.

571. Teacher Education, 2 credits.

578. Behavior Management for Special Needs Students, 2 credits. An introductory course investigating the theories and philosophies that deal with changing behavior patterns in individuals, groups and societies. Primary focus will be on classroom management and techniques for special needs students.

580. Practicum in School Problems, 1 to 4 credits. Prerequisites: Appropriate foundational and major area courses, and consent of the instructor and advisor. Practicum in study of desirable school practices, observations in nearby schools, and application of research findings in solving practical problems. May be repeated.

582. Resident Internship, 4 credits each. Prerequisites: participation in the summer program prior to the internship and elementary teacher certification. A full-time year-long internship experience conducted in a cooperating school district. Interns are assigned as members of instructional teams with full responsibility for a portion of the cooperating classroom.

583. Reading Clinic, 1 to 4 credits. Prerequisite: CTL 530 or consent of instructor. Supervised clinic practicum in diagnosis of reading difficulties, report writing, and tutoring. Includes student consultation.

584. Internship in Education, 1 to 8 credits. Prerequisites: Appropriate foundational, cognate, and major area course work and consent of the advisor and instructor. This is a culminating experience primarily for Sophomore and Junior students. The internships will be identified in one of the following sub-areas: (A) Educational Administration, (B) Special Education, (C) Curriculum, (D) Educational Research, or (E) Teacher Education. 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.

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 Education, 2 credits. An investigation of patterns of curriculum organization, organization of space in pre-schools, nursery schools, child care centers, and kindergartens. Investigation of policies and laws affecting budget, staff, parents, and plant. Investigation of principles of supervision involved in working with professional and paraprofessional staff and with student teachers.

493. Problems in Special Education, 2 to 5 credits.
Electrical Engineering

Professors Bengamin (Chair), Buitenhuis, Miles, Moe, Salefar, Schultz

Program Description

The department offers graduate programs leading to the Master of Engineering and the Master of Science degrees. The department maintains strong research emphases in systems engineering including controls, power, reliability, signals, artificial intelligence, computer hardware, imaging, and robotics. The M.S. degree is offered under both the thesis and non-thesis options. The department also participates in a schoolwide Ph.D. program in Energy Engineering. The research programs, laboratory facilities, close student-faculty interaction, and strong academic advising facilitate an excellent environment of scholarly activity and provide the faculty and graduate students with opportunities for professional growth. The graduate programs provide graduates with the knowledge, aptitudes, and attitudes which prepare them for corporate and governmental jobs and for further research and development.

Admission Requirements

Master of Science

1. B.S. degree in Electrical Engineering from an ABET accredited program. (Students holding a B.S. degree in a science field, e.g., physics, computer science, mathematics, 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.

Master of Engineering

1. B.S. degree in Electrical 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.

Applicants for admission to any of the programs for graduate studies in Electrical Engineering from non-ABET accredited universities/programs must submit scores from the General Test of the Graduate Record Examination.

Degree Requirements

1. Possible concentrations or combinations: a) Systems including circuits, communications, control, signal processing, electronic computers, microprocessors, and power; b) Energy conversion, machine design, and electric power networks; c) High Frequency devices and fields.
2. Minors and cognates are encouraged in areas such as mathematics, physics, engineering, computer science, and/or related areas.
3. The Master of Engineering program requires one-third engineering design, one-third advanced engineering, and one-third in related areas, which must include at least six credits outside of the department.

Courses

508. Decision Systems. 3 credits. Prerequisite: Electrical Engineering 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. Semi-Conductor Circuits. 3 credits. Prerequisite: Electrical Engineering 421 or consent of instructor. The use and application of semi-conductor device models to the analysis and design of semi-conductor device circuits.
511. Industrial Electronics. 3 credits. Prerequisite: Electrical Engineering 321. Application methods and problems of electronic circuits in the manufacturing and the power industries.
519. Digital Computer Logic. 3 credits. Prerequisites: Electrical Engineering 201 and 451. Logic design analysis of digital computers with some applications to counter circuits.
520. Electronic Computing Systems. 3 credits. Prerequisites: Electrical Engineering 201 and 202. 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: Electrical Engineering 314. Modern methods of high speed digital processing of signals will be studied. Techniques which will be used include the Fast Fourier Transform, recursive and nonrecursive discrete filters. The digital computer will be used to implement these filters.
525. Electromagnetic Fields. 3 credits. Prerequisite: Electrical Engineering 316. Static electric and magnetic fields, field mapping, and applications to transmission lines, wave guides, and antennas.
532. Antenna Theory. 3 credits. Prerequisite: Electrical Engineering 316 or consent of instructor. Physical principles underlying antenna behavior and design as applied to antennas.
536. Optical Fiber Communications. 3 credits. Prerequisites: 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.
590. 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.
595. 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 formal written report. S/U grading only.
411. Communications Engineering. 3 credits.
423. Power Systems I. 3 credits.
428. 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)

Energy Engineering

Associate Professor Schulz (Chair)

Program Description

The Doctor of Philosophy program in Energy Engineering prepares students who have a strong interest in engineering, research and/or teaching careers in the fields related to energy. The curriculum includes study in alternative energy sources such as wind and geothermal, solar, and hydrogen energy. The student will develop a strong research methodology and apply this research method to problems in areas specific to the energy field. The student will also, through formal study
and seminars, develop an understanding of the ethical, political and environmental issues associated with the production and use of energy.

Doctoral study will be offered in (1) combustion science, (2) energy conversion systems engineering, and (3) environmental systems.

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 bachelor’s degree from an ABET accredited engineering program or
3. Students who seek admission with a B.S. degree in a science field will be required to meet the admission requirements of their chosen M.S. field of study. The Engineering Graduate Program Committee will, in consultation with faculty in the chosen M.S. department, recommend specific undergraduate engineering courses which must be taken as prerequisite course work.

Students who seek admission with the bachelor’s degree in a science field 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.

Degree Requirements
The following requirements are in addition to the general requirements for the Ph.D. described on page 173.
1. Scholarly Tools: Proficiency in mathematics demonstrated by completing 9 approved math 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 M.S. program.
3. A minimum of 30 credits for doctoral research.
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 course work will include two components:
   a. Selected course work: A minimum of 15 credits hours of graduate course work recommended by the student’s advisor in support of his or her research topic.
   b. Multidisciplinary emphasis: A minimum of 15 credit hours of energy-related graduate course work which includes:
      EnE 501: Energy, Resources, and Policy (3 credits)
      EnE 502: Alternative Energy Systems (3 credits)
      EnE 562: Energy Engineering Seminar (3 credits)
      EnE 590: Special Topics in Energy Engineering (6 credits)
5. A written comprehensive examination taken when at least 24 credits of doctoral course work is completed or after completing 54 credits of course work past the baccalaureate degree before being advanced to candidacy (Note: the comprehensive exam will be administered by the EGPC). This examination will be based significantly on the core of course work past the baccalaureate degree before being advanced to candidacy.
6. Each student must present to his or her advisory committee an annual oral progress report describing their research progress over the previous year. Of these presentations, to be given NO LATER than the same academic year in which the written comprehensive exam is taken, will consist of an oral examination that includes a presentation of the dissertation research plan. The oral exam must be completed at least 1 year prior to the expected completion of the Ph.D. requirements.
7. Candidates 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.

Courses
501. Energy, Resources, 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. Prerequisites: 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.


590. Special Topics in Energy Engineering. 1 to 6 credits. Prerequisite: Consent of instructor. Investigation of special topics in energy engineering dictated by student and faculty interests. These topics must include 3 credits of alternative energy sources/systems. May be repeated up to a total of 9 credits.

599. Doctoral Research. 1 to 15 credits repeatable to 30.

English Language
and Literature

Professors Anderegg, Beard, Borden, Carson, Coleman, Dilks, Dixon, Donaldson, Hampsten, Huang, Koprice, Lewis (Chair), Little, Marshall, McKenzie, J. Meek, M. Meek, O’Donnell, Rankin, Sheridan, Wiener

Program Description
The Department offers the degrees of Master of Arts, Master of Education, 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. Recent visitors have been Jonis Agee, Czeslaw Milosz, Louise Erdrich, Larry McMurtry, Leslie Silko, James Welch, Reginald McKnight, Luisa Valenzuela, Tobias Wolff, and Tim O’Brien.

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 composition 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. 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).
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 Graduate Teaching Assistantships and Board of Higher Education tuition scholarships for North Dakota residents.

**Degree Requirements**

**Master of Arts (thesis and non-thesis options)**
1. English 500, English 442, English 501 and 501L for Graduate Teaching Assistants, and either English 510 or 511 with grades of A or B.
2. Up to six credits of Readings and Research courses (English 590, 591, and 593) may be used to supplement the standard graduate offerings.
3. Four credits are allowed for the thesis.

**Doctor of Philosophy**
1. Thirty (30) semester credits of course work after the M.A. should be selected so as to help the student prepare for the comprehensive examinations, provide work in desirable cognate areas, and give necessary background in the field of the dissertation.
2. Up to 12 credits in addition to the six 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, or pedagogical theory and practice; literary genres, modes, or themes; studies in language; special topics in literature or language. These examinations will normally be taken after the course work is completed.
5. Eighteen (18) 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 442, 500, 501 and 501L (for Graduate Teaching Assistants only), and 510 or 511 with grades of B or better.

**Courses**

**500L. 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, poetry, and drama. 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, poetry, or drama 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.

**523. Studies in Cinema.** 3 credits. A course examining the aesthetic, social, and historical significance of cinema as a narrative and dramatic form. The subject may vary by genre, historical period, theme, or critical approach. Repeatable when subject matter varies.

**531. Seminar in English Literature.** 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.
- A. American Literature
- B. The Bible
- C. Cinema
- D. Drama
- E. English Literature
- F. European Literature
- G. Film
- H. French
- I. German
- J. Germanic Literature
- K. Greek
- L. English Language
- M. Modern American Literature
- N. Modern English Literature
- O. Russian
- P. Spanish
- Q. Spanish-American Literature
- R. Creative Writing
- S. Women Writers and Readers
- T. Works of Major Authors

**591. Readings for Ph.D. Comprehensive Examinations.** 1 to 4 credits.
- A. American Literature
- B. The Bible
- C. Cinema
- D. Drama
- E. English Literature
- F. European Literature
- G. Film
- H. French
- I. German
- J. Germanic Literature
- K. Greek
- L. English Language
- M. Modern American Literature
- N. Modern English Literature
- O. Russian
- P. Spanish
- Q. Spanish-American Literature
- R. Creative Writing
- S. Women Writers and Readers
- T. Works of Major Authors

**593. Research.** 1 to 4 credits.
- A. American Literature
- B. The Bible
- C. Cinema
- D. Drama
- E. English Literature
- F. European Literature
- G. Film
- H. French
- I. German
- J. Germanic Literature
- K. Greek
- L. English Language
- M. Modern American Literature
- N. Modern English Literature
- O. Russian
- P. Spanish
- Q. Spanish-American Literature
- R. Creative Writing
- S. Women Writers and Readers
- T. Works of Major Authors

See catalog entries for prerequisites for English 500 and the consent of the Department. Supervised independent study. Repeatable.

**594. Thesis.** 3 credits. Prerequisite: English 500. Similar in method to English 531. Repeatable.

**599. Dissertation.** 1 to 3 credits. Prerequisite: English 500. Similar in method to English 531. Repeatable.

**501. Teaching College English.** 3 credits. An introduction to theories and methods of teaching college English. Required of Graduate Teaching Assistants in English.
Geography

Professor Anderton, Goodman, Hammen, Hemmasi, Munski, Todhunter (Chair)

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 regional and urban development, environmental geography, geographic education, and geographic techniques. 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 northern Plains, Prairie Provinces, North Woods and northern Great Lakes.

The graduate program in regional and urban development provides the background education and training necessary for students to enter the field of rural and urban development. The program is designed to assist students in developing professional competence in the concepts, skill, and tools required by today’s development specialists. Course work in rural economic development, industrial location, transportation, urban geography and planning, population geography, tourism, and historical geography, are combined with cognate work in finance, real estate, and public administration to qualify students for the broad and ever-expanding number of organizational units that hire economic developers.

The graduate program in environmental geography reflects a geographic focus on land use, environmental quality, human impact, and environmental history. Students follow a sequence of required and elective courses which reflects an environmental emphasis such as resource management, water resources, climatology, environmental site assessment, geoarcheology, or human-environmental relationships. 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.

More complete information regarding faculty, laboratory facilities, recent publications and paper presentations, course work, and entry level graduate placement can be obtained from our web page (http://www.und.nodak.edu).

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, cultural, 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 of two seminars in Geography depending upon the focus of the student’s approved program, either Geog 521 (Physical) for the M.S. or 551 (Human) for the M.A.
3. A minor or cognate areas of study that reflects the student’s focus on physical or human topics.

Thesis

1. A minimum of 30 semester credits including 9 semester credits of 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 includes 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 which may or may not involve research.

Courses

501. Geographic Thought and Philosophy. 3 credits. Required of all graduate students. A scholarly examination of the scope and content of geography from its inception to the present.
521. Seminar in Physical Geography. 3 credits.
537. Graduate Co-operative Education. 1-6 credits. Prerequisites: MS/MA students must have minimum of 12 credits, permission of department chair or co-op coordinator. Practical experience of applying advanced concepts of geography. Experience will vary from student to student and must be coordinated with co-op host.
551. Seminar in Human Geography. 3 credits.
552. Seminar in Economic Geography. 3 credits.
560. Seminar in Regional Geography. 3 credits.
573. 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. 3 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 graduate study and methods of research in geography. Emphasis upon creation and testing of hypotheses and skills in eliciting and analyzing geographical data. An introduction to the geographic literature, focusing upon bibliographical and geographical source materials.
591. Directed Study in Geographical Problems. 1 to 4 credits.
595. Research Topic in Geography. 3 credits.
334. Climatology. 4 credits.
375. Graphics and Air Photo Interpretation. 3 credits.
577L. Spatial Analysis Laboratory. 1 credit.
422. Geography of Water Resources. 3 credits.
455. Political Geography. 3 credits.
457. Urban Geography and Planning. 3 credits.
462. Geography of North America II. 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, Ghassemi, Gosnold, Groenewold, Hartman, Karner, Kelley (Chair), Korom, LeFever (Graduate Director), Matheny, Perkins, Reid

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.

Admission Requirements

1. At least 30 semester credit hours in the geological sciences with a GPA of at least 3.00.
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 analytic geometry and calculus (equivalent to Math 211 at UND) for the M.A. degree; the entire calculus sequence (equivalent to Math 211, 212, 213 at UND) 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. Graduate Record Examination General test; Advanced test recommended.

Initial decisions for admission and financial aid are made about March 1 for the fall semester and about September 1 for the spring semester.

Degree Requirements

Please see page 167 of this catalog for the general requirements for the M.A., M.S., or 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 in one of the following ways:

1. achieve a score on the Geology GRE higher than the 50th percentile.
2. have completed at least 6 semester credits of course work, 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 master’s 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 graduate 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 course work in geology (and of courses listed in the Graduate section of the catalog) may be taken for graduate credit.

Doctor of Philosophy

Please see page 173 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. analysis of depositional systems.

505. Isotope Geochemistry, 3 credits. Prerequisites: Geology 321, or permission of instructor. Geochemistry and cosmochemistry of radioactive and stable isotopes; isotope equilibria; applications in paleoecology, environmental isotope geochemistry, igneous, metamorphic, and sedimentary petrology.

506. Glaecial Geology, 4 credits. 3 hours lecture, 2 hours laboratory. Prerequisite: Geology 311. Origin, growth, and movement of glaciers; landforms and deposits incident to glaciaation.

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 protogenetic.

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 4 credits. Prerequisites: Geology 415, Biology 101, or consent of instructor. A sequence of courses emphasizing A. Principles of paleontology; B. Evolution and the fossil record; C. Palaeoecology; D. Palaeontological procedures; E. MicroPaleontology.

518. Topics in Advanced Stratigraphy, 2 to 4 credits. Prerequisites: Geology 411, 415. Selected topics in Linhatosatigraphy and biostratigraphy.

520. Statistical Applications in Geology, 3 credits. Prerequisites: An introductory statistics course, such as CTL 515 or Prey 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 multidivariate 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. Prerequisites: Geol/GeoE 417, Geol 427, Math 213, or consent of instructor. Selected topics in ground and soil water movement, fracture flow, analytical/numerical modeling, and groundwater supply.

531. Hydrogeochemistry, 3 credits. Prerequisite: Geology 321, Math 212, or permission of instructor. The origin, characteristics and modeling of surface and ground water geochemistry.

532. Contaminant Hydrogeology, 3 credits. Prerequisites: Geol/GeoE 417, Geol 427, Math 213, or consent of instructor. Chemical and physical processes affecting contaminant behavior in groundwater with analytical/numerical modeling and case studies.

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).

emphasis upon subject matter and a supervised teaching internship. The teaching history at the undergraduate collegiate level. It places heavy tuition, are available. Applications for assistantships should be submitted an advisor in the College of Education and Human Development. formation. The program advisor for the M.Ed. will be in the Department area of concentration in History. See pages 168 and 169 for further in-
available for students who wish to complete an education degree with an Arts degree and the Doctor of Arts degree. The M.Ed. degree is also
3. History 502, Historiography, counted as 3 credits in the major
2. Research seminars, either 511 or 515.
3. A writing sample of 8-10 pages, preferably a research or seminar

History

Professors Berger, Beringer (Chair), Clingan, Ellis, Etting, Handy-Marchello, Howard, Iseminger, Mochoruk, Porter, Rowley, Vivian

Program Description
The department of History offers programs leading to the Master of Arts degree and the Doctor of Arts degree. The M.Ed. degree is also available for students who wish to complete an education degree with an area of concentration in History. See pages 168 and 169 for further in-
formation. 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 6 credits at 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 20 in either United States or European history and 10 credits in: a) a field of history not included in the primary concentration, such as United States or European History or Latin American History, or b) a minor in a related discipline such as Anthropology, Communications, English, Geography, Political Science, or Sociology, or c) a cognate as defined on page 175 of this catalog.
2. Research seminars, either 511 or 515.
3. History 502, Historiography, counted as 3 credits in the major concentration.

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.

Applicants will be evaluated on an individual basis, with preference given to those with at least two years of teaching experience in history, the social sciences, or the humanities, or comparable experience.

Degree Requirements
1. History 502, 511 or 515, and 551.
2. One 3 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 8 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.)

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 non-academic employment opportunities.

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 American historians.

511. Research Seminar in American History, 3 credits. Required for all candidates for the Doctor of Arts and Master of Arts who do not take History 515. This course requires preparation of a research paper. The subject of the research will be within an announced general topic area of American History. Repeatable.

515. Research Seminar in European History, 3 credits. Required for all candidates for the Doctor of Arts and Master of Arts who do not take History 511. This course requires preparation of a research paper. The subject of the research will be within an announced general topic area of European History. Repeatable.

551. Seminar in the Teaching of History, 1 to 4 credits. Required of all students pursuing the Doctor of Arts. Includes methods appropriate to college level teaching. Class consists of discussion, demonstration, and practice. S/U grading only.
Industrial Technology

Professor Diez, Holten, Nwoke (Chair),
Smart, Wang

Program Description

The Department of Industrial Technology offers programs 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

A baccalaureate degree in Industrial Technology or related field. Students without the background but with a minimum of 20 undergraduate semester credits in Industrial Technology or related field 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

A. Thesis Option:
A minimum of 30 semester credits including 9 semester credits for approved minor or cognate courses.

B. Non-Thesis Option:
A minimum of 32 semester credits including 9 semester credits for approved minor or cognate courses.

C. Optional courses for Thesis or non-Thesis Programs

<table>
<thead>
<tr>
<th>Courses</th>
<th>Credits</th>
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<tbody>
<tr>
<td>535 Trends &amp; Issues in Industrial Tech</td>
<td>3</td>
</tr>
<tr>
<td>537 Graduate Cooperative Education</td>
<td>1-3</td>
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<tr>
<td>540 Supervision and Industrial Training</td>
<td>3</td>
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<tr>
<td>545 Seminar in Industrial Technology</td>
<td>1-3</td>
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<tr>
<td>550 Industrial Technology Management</td>
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<tr>
<td>565 Product Safety and Liability</td>
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<tr>
<td>591 Technical Problems in Industrial Technology</td>
<td>1-3</td>
</tr>
<tr>
<td>996 Continuing Enrollment</td>
<td>1-12</td>
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D. General:

i. At least half of the credits in the student’s Program of Study must be at or above the 500 level.

ii. Other requirements in the catalog not specifically identified herein but are to be met by all students and the program of study must be adhered to.

Courses


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.
Kinesiology

Professors Anderson, Brinkert (Chair), Eklund, Humphries, Parker, Schroeder, Steen (Graduate Director), Von Duvillard, Whitehead

Program Description

The Department of Health, Physical Education and Recreation 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
- Physical Education Teaching
- Sports Coaching
- Sports/Exercise Psychology

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 9 graduate credits.

Non-Thesis Option

1. Select permanent advisor and submit the Program of Study by the completion of 9 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: HPER 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.
503. Theory and Practice in Public Recreation Administration, 2 credits. Legal implications, community relations, finance and relationship of schools and other community agencies in community recreation.
501. Theory and Practice in Physical Education Administration, 2 credits. Prerequisite: HPER 340 or consent of the instructor. A study of the knowledge, skills and insights as they relate to planning, management and leadership necessary for effective administration of a physical education program.
514. Theory and Practice in Intramural Sports Administration, 2 credits. Prerequisite: HPER 405, experience as a director or by consent of the instructor. Study of the basic ingredients required to administer a successful intramural program.
521. Analysis of Physical Education Teaching and Coaching, 3 credits. A review of the knowledge and skills for instruction in sport and fitness activities, with practical applications to teaching and coaching.
523. Historical and Philosophical Foundations of Physical Education, 2 credits. Educational justification of various phases of the physical education program based on historical and philosophical evidence.
524. Adapted Physical Education, 3 credits. Prerequisite: HPER 404 or consent of the instructor. Theories and practice of adapted physical education for students with exceptionalities.
525. Motor Development, 3 credits. Prerequisites: HPER 276 or HPER 355, or consent of the instructor. Study of age-related performance changes across the life span. Emphasis will be on physical and mental change as they affect motor skill acquisition and performance.
529. Exercise Psychology, 3 credits. Prerequisites: HPER 440 or consent of the instructor. A research-based study of the psychological aspects that are associated with participation in exercise/physical activity.
530. Sports Biomechanics, 4 credits. Prerequisite: HPER 332 or consent of the instructor. The application of principles of mechanics to the study of human motion in sports and exercise.
531. Sport Psychology, 3 credits. Prerequisite: HPER 440 or consent of the instructor. A research-based study of the psychological aspects associated with participation in sport.
533. Motor Learning and Control, 3 credits. Prerequisite: HPER 276 or equivalent or consent of the instructor. Study of the acquisition and control of human motor skill.
534. Sport Sociology, 3 credits. Prerequisite: HPER 401 or consent of the instructor. This course is designed to examine various sociological factors in American society and their relationship to the sport experience.
535. Advanced Exercise Physiology I. Prerequisites: HPER 402 or equivalent, and consent of the instructor. The focus of this course is on the mechanisms which affect the cardiovascular and pulmonary system responses at rest, during and after exercise. This is a lecture/laboratory course.

536. Advanced Exercise Physiology II. 4 credits. Prerequisites: HPER 535 and consent of the instructor. Acute and chronic muscle function, energy metabolism, and regulatory process of skeletal muscle and muscle cell function during rest, during exercise and during recovery will be the focus of this lecture/laboratory course.

538. Exercise in Health and Disease. 4 credits. Prerequisites: HPER 535 and consent of the instructor. The role of exercise in the prevention and rehabilitation of individuals in various disease states, e.g., atherosclerosis, chronic obstructive lung disease, hypertension, diabetes, osteoporosis, obesity, and others. Health states include aging and pregnancy. This is a lecture/laboratory course.

539. Theory and Practice of Exercise Testing. 4 credits. Prerequisites: HPER 535 and consent of instructor. The focus of this lecture/laboratory course is on the electrophysiology of myocardial function and exercise prescription for symptomatic and asymptomatic populations. Students will learn to interpret resting and exercise electrocardiogram recordings.

540. Teaching Lifetime Fitness. 3 credits. A study of the philosophical, disciplinary, and professional considerations that are necessary for the optimal planning and execution of lifetime fitness education programs in public schools and allied settings.

541. Adult Fitness Programming. 3 credits. A study of adult fitness and 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.

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 Synthesis and Analysis 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 course work; 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: HPER 501 and consent of the student’s faculty advisor, library, laboratory or field research of an approved project in Sport Pedagogy or Sport and Exercise Science.

592. Directed Readings in Kinesiology. 2 to 3 credits. Prerequisite: HPER 501 and consent of the student’s faculty advisor. Extensive readings to cover a student’s area of specialization and interest; written reports are required (may be repeated to a total of six credits).

Linguistics

Special Summer Faculty: Alexander, Bickford, C. Black, H. Black, Clifton, Dooley, Everett, Frantz, Levinsohn, Lowe, Marlett (Chairperson), Matthews, Meyer, Quakenbush, Rhodes, Roberts, Tuggy, 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. The program centers around the course offerings of the Summer Institute of Linguistics (SIL), which operates only during the summer sessions. Candidates for the degree will therefore be expected to spend at least two summers enrolled in SIL.

Admission Requirements

1. A minimum of 20 semester credits in linguistics and foreign language, of which at least 10 must be in linguistics.

Students deficient in undergraduate credit requirements but otherwise qualifying for acceptance may use their first summer’s work at SIL (or 10 graduate credits in courses designated as linguistics) in lieu of the undergraduate requirement in linguistics. The foreign language requirement may be met by passing a reading examination in a foreign language.

Degree Requirements

1. A minimum of 32 credits including 4 credits for a thesis and may include a minor or cognate (see page 175).

The student may choose to complete part of the credit requirements through courses 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, and who hold at least an undergraduate minor in English, may be eligible for support as a Graduate Teaching Assistant in English during the academic year.

Further information concerning the operation of the Summer Institute of Linguistics may be obtained from The Summer Institute of Linguistics, 7500 W. Camp Wisdom Road, Dallas, Texas 75236.

Courses

503. Phonology II. 3 credits. Prerequisites: Linguistics 450, 451, or equivalent. Phonological phenomena examined from a generative point of view; emphasis on creation and testing of hypotheses about the phonological systems of particular languages.

504. 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.

505. Typology and Discourse. 3 credits. Prerequisite: Linguistics 452. The course covers recent trends relating to language typology and cross-linguistic generalizations, focusing on the domains of morphosyntax, semantics and pragmatics.

506. Field Methods. 2 to 4 credits. Prerequisites: Linguistics 450, 451, 452, or equivalent. Intensive work with speakers of non-Indo-European languages for the purposes of developing skill in eliciting useful data and analyzing the semantic, grammatical, and phonological structures of human languages.

507. Special Topics in Linguistics. 1 to 4 credits. Topics of current interest in linguistics. May be repeated if topic is different.

510. Semantics and Pragmatics. 3 credits. Prerequisite: Linguistics 452 or equivalent.

590. Readings in Linguistics. 1 to 4 credits. Supervised individual study. May be repeated up to four hours total.

594. Research in Linguistics. 2 to 6 credits. Analysis of field data and preparation of a technical description under staff supervision. May be repeated.

450. Articulatory Phonetics. 2 credits.

451. Phonology I. 3 credits.

Mathematics

Professors Collings, Dearden, Dunnigan, Gilsdorf (Chair), Gregory, Harris, Iiams, Khavanin, Leduc, Metzer, Millsapugh, Prigge, Richards, Uherka, Wells

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 without that background 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 aims, interests and background.

Master of Education
1. A minimum of 16 credit hours of graduate work in mathematics, with at least 8 credits being at the 500 level or above, including 2 hours of 997, Independent Study.
2. Complete in undergraduate or graduate school—courses in algebra equivalent to Mathematics 441 and 442, a course in analysis equivalent to Mathematics 431, a course in geometry equivalent to Mathematics 409, and a course in probability or statistics equivalent to Mathematics 421.

A graduate minor in statistics is also available. 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 chairperson of the Mathematics Department.

Courses
505. Seminar in Mathematics. 1 to 3 credits.
512, 513. Modern Analysis I, II. 3 credits. Prerequisite: Math 432. Lebesque measure and integration, abstract measure and integration theory, product integral, the $L^p$ classes, Hilbert and Banach spaces.
515, 516. Applied Mathematics. 6 credits. Prerequisite: Math 351 or consent of instructor. The content of the course varies but includes current topics in applied mathematics such as: (1) ordinary or partial differential equations, (2) approximation theory and perturbation techniques, (3) modeling and computer simulation, (4) special functions, (5) numerical analysis, (6) variational methods, (7) transforms, (8) integral equations.
518, 519. Algebra I, II. 3 credits. Prerequisite: Math 441 and 442. Group theory, rings and fields, vector spaces, Galois theory and finite fields.
520, 521. Topology I, II. 3 credits. Prerequisite: Math 431. Point set topology, including metric spaces and such topics as homeomorphisms, separation axioms, compactness, connectedness, general convergence, compactifications and metrizability.
541. Linear Statistical Models. 3 credits. Prerequisite: Math 431. Point set topology, including metric spaces and such topics as homeomorphisms, separation axioms, compactness, connectedness, general convergence, compactifications and metrizability.
542. Multivariate Statistical Analysis. 3 credits. Prerequisite: Math 422 or consent of instructor. Distribution of quadratic forms, general linear hypotheses of full rank, least squares, Gauss-Markoff theorem, estimability, parametric transformations.
543. Statistical Inference. 3 credits. Prerequisites: Math 431. Point set topology, including metric spaces and such topics as homeomorphisms, separation axioms, compactness, connectedness, general convergence, compactifications and metrizability.
403. Theory of Probability. 3 credits.
405. Selected Topics in Mathematics. 1 to 3 credits.
408. Discrete Structures. 3 credits.
409. Geometry. 3 credits.
412. Differential Equations. 3 credits.
415. Topics in Applied Mathematics. 1 to 3 credits.
416. Statistics in Topics. 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.
491, 492. Reading Course in Mathematics. Credit not to exceed 1 hour a semester and total credit not to exceed 3 hours.

Mechanical Engineering

Professors Bandyopadhyay, Bibel, Grewal, Moen, Ness

Program Description
The Department of Mechanical Engineering offers graduate programs leading to the Master of Science and Master of Engineering degrees. The M.S. degree is offered under both the thesis and non-thesis options.

Admission Requirements
1. B.S. degree in Mechanical Engineering from an ABET accredited program. (Students who hold another engineering or science degree may be admitted to Provisional or Qualified Status with an obligation to acquire an appropriate background in Mechanical Engineering.)
2. Graduate Record Examination Test required for those with undergraduate degrees from other than ABET accredited programs.

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 courses will alternate between the thermal science-fluids-energy areas and the mechanics-materials-manufacturing-processes areas. All graduate students who have not completed their course work will be required to enroll in these courses. A course will not be repeated in less than 2 years unless by student demand. All other courses listed will be taught on appropriate student demand.

Courses
513. Advanced Engineering Materials. 3 credits. Two hours recitation, three hours laboratory. Prerequisite: Mechanical Engineering 413. Topics to be covered are crystal lattice geometry and metal structures, diffusion mechanisms, phase transformations, phase equilibrium, phase diagram interpretation, recrystallization and grain growth, plastic and elastic properties of alloys, and advanced dislocation theory.
523. Advanced Machine Design. 3 credits. Prerequisite: Mechanical Engineering 322 and 421. Advanced design and analysis of machine components; kinematic synthesis and analysis of mechanisms, force analysis, rotor dynamics, gyro dynamics, stresses in thick cylinders and flywheels, lubrication, statistical considerations, energy methods, curved beams.
526. Advanced Vibrations. 3 credits. Prerequisite: 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 Analysis. 3 credits. Prerequisites: Math 351 and ME 429, or consent of instructor. Computer-aided techniques for finite element analysis of engineering systems. Topics include: static and dynamic analysis of structures and components and the analysis of steady-state and transient field problems. Computer implementations of techniques.

571. Advanced Fluid Dynamics, 3 credits. Prerequisites: Mathematics 351, Mechanical Engineering 306, and Mechanical Engineering 341. Presentation of theory and application for both potential and viscous flow. Development of continuity equation and equations of boundary value problems for both compressible and incompressible fluids.


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.

445. Energy Technology, 3 credits.

446. Gas Turbines, 3 credits.

449. Internal Combustion Engines, 3 credits.

451. Heating and Air Conditioning, 3 credits.

454. Refrigeration, 3 credits.

476. Intermediate Fluid Mechanics, 3 credits.

490. Special Laboratory Problems, 1 to 3 credits.

Microbiology and Immunology

Professors Flower, Hill, Kelleher (Chair), Spanier, Young

Program Description

The Department of Microbiology and Immunology offers graduate programs leading to an M.S., Ph.D., and Ph.D./M.D. degree. Graduate study is available in a number of disciplines including cell biology, clinical microbiology, ecology, genetics, immunology, microbial physiology and biochemistry, molecular biology, parasitology and virology. The goals of the program are to provide scientific training 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, and graduate seminars. The scholarly tool requirement for Ph.D. students consists of a minimum of six credits of statistics and/or computer science. 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 bioinformation 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 Toxicology, and Physiology. Additional resources in neighboring buildings 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, 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 General 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 required to participate in at least one semester of teaching during their tenure in the Department.

Degree Requirements

Master of Science

See Graduate School Requirements for the M.S. on page 167.

Doctor of Philosophy

See Graduate School Requirements for the Ph.D. on page 173. Qualifying Diagnostic 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 on page 175.
Courses

Courses marked with an asterisk (*) are offered in alternate years only.

*591. Molecular Virology. 2 credits. Prerequisites: Microbiology and biochemistry and/or consent of instructor. Genetics and molecular biology of animal and bacterial viruses, with emphasis on viral-host interactions, viral replication, and viral gene expression.

502. Clinical Virology. 2 credits. Prerequisite: Previous course in microbiology and/or consent of instructor. Emphasizes current concepts about human viruses regarding pathogenesis, clinical syndromes, epidemiology, prophylaxis and treatment.

*504. Microbial Physiology. 2 credits. Prerequisites: Microbiology and Biochemistry and/or consent of instructor. The cellular and molecular biology of microorganisms will be discussed. Special emphasis will be placed on the adaptation of microorganisms to unusual environments and on the use of microorganisms in biotechnology.

*505. Environmental Microbiology. 2 credits. Prerequisites: Microbiology 302 or permission of the instructor. Students will meet 4 hours per week for half of the semester to discuss important issues related to environmental microbiology. Discussions will be based upon readings from the current literature.

506. Biology of Microorganisms. 2 credits. Prerequisite: Biochemistry 301 or equivalent. Structural characteristics of bacteria, fungi, viruses, and protozoa. The physiology, metabolism, and genetics of bacteria; modes of action and spectrum of activity of antimicrobial agents.

507. Seminar in Microbiology. 1 credit. SU only grading only.

508. Clinical Microbiology. 2 to 4 credits. Prerequisite: Biochemistry 301 or equivalent. A detailed study of pathogenic microbes with respect to morphologic, physiologic, serologic characteristics, and of the epidemiology and pathogenesis of infectious diseases.

509. Immunology. 2 credits. Prerequisite: Biochemistry 301 or equivalent. Fundamentals in immunology and immunological techniques.

511. Microbiology & Immunochemistry. 1 credit. Prerequisite: Microbiology 302 or equivalent. A series of reports on current scientific literature in Microbiology and Immunology. SU only grading only.

*512. Microbial Genetics. 2 credits. Prerequisites: Basic courses in genetics and microbiology or biochemistry and/or consent of instructor. Genetic mechanisms in microorganisms, mutagenesis, fine structure of genetic material, genetic engineering. Selected Readings.

513. Research Tools. 2 credits. Orientation to research and laboratory safety. The theory and application of modern laboratory techniques include tissue culture, cell fractionation, enzyme assay, immunization procedures, bacterial growth curves, photomicroscopy, strain construction, genetic engineering, gel electrophoresis, enzyme immunoassay, and western blot techniques are presented. SU only grading only.

*514. Radioisotope Techniques. 2 credits. Prerequisite: MBIO 302 or equivalent. Laboratory procedures utilized in working with radioisotopes. Care and handling of radioactive by-products, radiation survey and survey records, monitoring techniques and instruments, and licensing procedures are covered.

*515. Virology Laboratory. 3 credits. Prerequisite: Microbiology 508 or consent of instructor. Basic techniques in virology and tissue culture.

*517. Advanced Immunology Laboratory. 2 credits. Prerequisite: Microbiology 509 or equivalent. Laboratory experience will include procedures for analysis of antigens, antibodies, and cell mediated immune responses.

518. Advanced Immunology. 2 credits. Prerequisite: Basic courses in microbiology and genetics or consent of instructor. Fundamental techniques in gene manipulation, cloning and engineering.

519. Special Problems in Microbiology. 1 to 6 credits. Prerequisite: MBIO 302, 506, 508, and 590, undergoing revision. Require consent of instructor.

Music

Professors Fry, Koozin, Lewis, Miller (Chair), Norman, Rodde, Sedgewick, Solose, Towne

Program Description

The Department of Music 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 a full 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.
3. Recommendations from former employers or supervisors indicating success or potential success as a music teacher (for Music Education students only).
4. A repertoire list showing the extent of the repertoire for the major performing instrument or voice (Performance students only).
5. A representative sample of compositions (Composition students only).
6. An audition on the major performing instrument, voice, and/or conducting. (Students who are unable to perform an audition in person may submit a tape. This recording should be of a recent live performance.)
7. Interview by the appropriate music faculty. (Students who are unable to visit the UND campus and meet with the music faculty will be telephoned for an interview. This conference call will assess the student’s goals regarding graduate study in music at UND.)

(Vocal Performance students must meet the following German and/or French language requirements: 2 years of German or French, or 1 year of each, or the equivalent in reading and diction skills. Language requirements may be met with the required amount of course work [one or two years] or by demonstrating Level II [for one year] or Level IV [for two years] proficiency in the Languages Department Placement Examinations. Students must also demonstrate adequate French, German and Italian language diction skills to the Department of Music.)

Language deficiencies may be removed during the master’s degree program of study, but such credits will not count toward the master’s degree.

All students admitted to graduate study in music, whether to Approved, Qualified, or Provisional status, will be examined upon their arrival on campus so that the faculty of the department of music may more fully assess the background, accomplishments, and ability of each student and in order to provide appropriate advisement for the beginning of graduate study. This process will involve some or all of the following activities:

1. A Music History Styles Test
2. A Music Theory Test
3. An Ear Training and Sight-singing Test
4. A Dictation Test in German, French, and Italian (for Vocal Performance students only)

Degree Requirements

The program of study for the Master of Music degree must include at least 32 credit hours of which at least one-half must be at or above the
500 level. All courses on the program must be listed in this catalog. The program has a major only (i.e., no cognate or minor areas). All students complete a Music Core Course Curriculum of 9 credits which includes Music 500, 502, and 508. 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.

**Music Education Specialization**

**CORE COURSES (9 credits)**
- MUS 503 Curricular and Psychological Foundations of Music Learning 3 credits
- MUS 507 Foundations of Music Education 3 credits
- MUS 598 Research in Music Education 3 credits
- MUS 997 Independent Study (Music Education topic) 2 credits

Other studies (7 credits)
- MUS 521 or 524 Instrumental or Choral Literature 3 credits
- MUS 561 or 562 Advanced Choral or Instrumental Conducting 2 credits
- MUS 594 and/or MUS 595 Individual Lessons 2 credits

**Electives (3 credits)**
- Performance or Pedagogy Specialization (Vocal/Keyboard)
- CORE COURSES (9 credits)
  - MUS 500 Introduction to Graduate Study 3 credits
  - MUS 502 Perspectives in Music Theory 3 credits
  - MUS 508 Perspectives in Music History 3 credits

**Other Studies (7 credits)**
- MUS 523 or 525 Keyboard or Vocal Literature 3 credits
- MUS 551 or 552 Vocal or Keyboard Pedagogy I 3 credits
- MUS 599 Graduate Recital 2 credits
- Other Electives 5 credits

Students will choose either the Performance or the Pedagogy Track.

**Performance Track**
- MUS 596 Individual Lessons 8 credits
- MUS 599 Graduate Recital 2 credits
- MUS 997 Independent Study 2 credits

**Pedagogy Track**
- MUS 596 Individual Lessons 4 credits
- MUS 553 or 554 Vocal or Keyboard Pedagogy II 3 credits
- MUS 590 or 591 Vocal or Keyboard Internship 1 credit
- MUS 597 Special Projects (Pedagogy topic) 2 credits
- MUS 997 Independent Study 2 credits

**Music Composition Specialization**
- MUS 506 Advanced Composition 8 credits
- MUS 593 Final Project in Composition 4 credits

**Other Studies (4 credits)**
- MUS 561 or 562 Advanced Choral or Instrumental Conducting 2 credits
- MUS 594 or 595 Individual Lessons: Piano 2 credits

**Electives (7 credits)**
- **Choral Conducting Specialization**
  - MUS 561 Advanced Choral Conducting 2 credits
  - MUS 562 Advanced Instrumental Conducting 2 credits
  - MUS 594 Individual Lessons (Conducting) 2 credits
  - MUS 599 Graduate Recital (Conducting) 2 credits
  - MUS 521 Choral Literature 3 credits
  - MUS 997 Independent Study 2 credits

**Core Courses**
- MUS 500 Introduction to Graduate Study 3 credits
- MUS 502 Perspectives of Music Theory 3 credits
- MUS 508 Perspectives of Music History 3 credits

**Instruments Conducting Specialization**
- MUS 562 Advanced Instrumental Conducting 2 credits
- MUS 561 Advanced Choral Conducting 2 credits
- MUS 594 Individual Lessons (Conducting) 2 credits
- MUS 599 Graduate Recital (Conducting) 2 credits
- MUS 524 Instrumental Literature 3 credits
- MUS 997 Independent Study 2 credits

**Core Courses**
- MUS 500 Introduction to Graduate Study 3 credits
- MUS 502 Perspectives of Music Theory 3 credits
- MUS 508 Perspectives of Music History 3 credits

**Other Studies**
- MUS 594 Individual Lessons (Instrumental) 2 credits
- MUS 595 Individual Lessons 2 credits
- Other Electives 6 credits

For those in the composition concentration, there will be a final project in composition instead of an independent study.

**Residence and Transfer Requirements.** The specializations in Conducting require at least one year residency. Other specializations have no residency requirement. At least one-half of the credits for the degree must be taken on the UND campus, however. A maximum of 6 credits may be transferred from another institution, and a maximum of 4 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 require the student independently to 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 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 subject.

The topic for an independent study must be approved by the student’s Advisory Committee. Approval is effected by the student completing a form titled Outline of Independent Study, available from the Graduate School, then submitting the outline to the Advisory Committee for approval. The outline, 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 the student is advanced to candidacy for the degree.

A preliminary draft of the independent study must be presented to the advisory committee sufficiently in advance of the deadline for filing the Final Report so that the committee may thoroughly evaluate the report. Five copies of the report (one each for the student, the Advisory Committee, and the department) must be accepted by the Advisory Committee before the advisor will certify its completion to the Graduate School (prior to the deadline specified in the Academic Calendar) and before the student’s advisor submits a grade to the Registrar’s Office.

Music education students should refer to the department of music publication, “Guidelines for Music Education Independent Study.”

**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 will lead to a degree. The student has not been admitted as a candidate for a degree. To become a candidate 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. Demonstration of graduate level performing proficiency on the major instrument, in voice, and/or as a conductor.
4. The appointment of a Faculty Advisory Committee consisting of the student’s advisor or chairperson, the chairperson of the Music Department or designee, and another member of the music faculty. In
addition, a faculty member with pertinent specialties from outside the Music Department may be added to the committee. The Committee is appointed by the dean upon the recommendation of the chairperson of the Music Department. The chairperson of the Committee usually will 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 serve as the independent study advisor. The Committee is responsible for program advisement, independent study advisement, and examination of the student.

5. Approval of a Program of Study. Until such time as a student selects an advisor, the department chairperson 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. After the program has been signed by the student and the Department Chairperson, the Graduate School will issue the approval of the student. Normally the program should be developed early in the second semester of enrollment but should be filed PRIOR to the semester or session in which the student intends to graduate.

6. Approval of an Outline of Independent Study on a form available from the Graduate School. This outline, when approved by the Committee and deposited in the Graduate School, indicates acceptance of a topic for study and incorporation into an independent study. The outline form and three copies should be filed no later than the beginning of the semester or session 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. Candidates may not take the final comprehensive examination(s) unless they have applied to receive the degree, have been advanced to candidacy for the degree, are in satisfactory academic standing, and have been certified as eligible by the Graduate School in writing. Final comprehensive examinations which are failed may be repeated only with the prior approval of the Advisory Committee, the chairperson of the department, and the dean, but in no event earlier than at the next regularly scheduled offering.

Candidates for the Master of Music degree must pass a written final comprehensive examination which will cover (a) the principal field, (b) music history and literature, and (c) music theory. Such examinations will be given and evaluated by the student’s Faculty Advisory Committee, but the results will be certified to the Graduate School by the advisor and the department chairperson on the form Final Report of Candidate by the deadline specified in the Academic Calendar. The appropriate comprehensive examination(s) required for the degree will be arranged by the advisor and administered by the department no earlier than the semester preceding the semester in which the candidate intends to graduate.

Courses

500. Introduction to Graduate Study in Music. 3 credits. A course covering bibliography and methodology in the principal areas of research in music.

501. Graduate Music Theory Review. 3 credits. A comprehensive review of the harmonic, contrapuntal and formal elements of music, designed to prepare students for graduate-level music courses. Does not count toward fulfillment of the minimum 32 hours of the graduate music degree requirements; may be waived by examination.

502. Perspectives in Music Theory. 3 credits. Prerequisite: Music 501 or passing grade on placement examination. A comparison and evaluation of formal systems in music with emphasis on developing performance concepts through the study of specific representative compositions.


504. Seminar in Music. 1 to 4 credits. Seminars concerning various topics of interest to the faculty and students.

505. Graduate Music History Review. 3 credits. An accelerated comprehensive review of western music history designed to prepare students for other graduate-level music courses, emphasizing group learning through individual preparation. Credit does not count toward fulfillment of 32-hour minimum. Music graduate degree requirements. May be waived by examination.

506. Advanced Composition. 1 to 4 credits. The composition and performance of original works in selected instrumental and vocal media. May be repeated without limitation.

507. Foundations of Music Education. 3 credits. A comprehensive investigation of the historical, philosophical, and aesthetic foundations of music including current trends in music education.

508. Perspectives in Music History. 3 credits. Prerequisite: Music 505, or passing grade on placement examination. A seminar surveying music historical research approaches for the use of other music professionals. Topics include: Ethnomusicology, Music Critics, History, Editing, Sources, Performance Practice, Musical Research for Teaching.

521. Instrumental Literature. 3 credits. The study of instrumental music literature through scores and recordings.

523. Keyboard Literature. 3 credits. The study of keyboard literature through scores and recordings.

524. Choral Literature. 3 credits. The study of choral literature through scores and recordings.

525. Vocal Literature. 3 credits. The study of solo vocal literature through scores and recordings.

531. Vocal Pedagogy I. 3 credits. Teaching procedures, methods, and literature for teaching voice students from beginning through early intermediate levels, addressing questions of style, performance practices, editions, and techniques. Includes observation and teaching in both group and individual settings. Regular grading.

532. Vocal Pedagogy II. 3 credits. Prerequisite: Music 551, Vocal Pedagogy I. Teaching procedures, methods, and literature for teaching voice students from the late intermediate through advanced levels, addressing questions of style, performance practices, editions, and techniques. Includes observation and teaching in both group and individual settings. Regular grading.

552. Keyboard Pedagogy I. 3 credits. Teaching procedures, methods, and literature for teaching keyboard students from beginning through early intermediate levels, addressing questions of style, performance practices, editions, and techniques. Includes observation and teaching in both group and individual settings.

554. Keyboard Pedagogy II. 3 credits. Prerequisite: Music 552, Keyboard Pedagogy I. Teaching procedures, methods, and literature for teaching keyboard students from the late intermediate through advanced levels, addressing questions of style, performance practices, editions, and techniques. Includes observation and teaching in both group and individual settings. Regular grading.

561. Advanced Choral Conducting. 2 credits. Choral schools and composers since the sixteenth century, study of interpretations based on scores, recordings, and class performance.

562. Advanced Instrumental Conducting. 2 credits. Advanced techniques of instrumental conducting and score reading.

568. Administration and Supervision of Church Music. 1 to 3 credits. Problems, techniques, and materials in supervision and administration of vocal and instrumental music programs in the public schools.

570. Instrumental Ensemble Performance. 1 credit.

580. Choral Ensemble Performance. 1 credit.

590. Vocal Internship. 1 credit. Prerequisite: Vocal Pedagogy I. Teaching of group and individual voice under the supervision and critique of voice faculty. Repeatable up to two (2) credits. Regular grading.

591. Keyboard Internship. 1 credit. Prerequisite: Keyboard Pedagogy I. Teaching of group and individual keyboard under the supervision and critique of keyboard faculty. Repeatable up to two (2) credits. Regular grading.

593. Final Project in Composition. 4 credits. The composition and performance of an original musical work of proportions suitable for a final composition project at the masters level.

594. Individual Lessons. 1 credit. Individual lessons in secondary instruments, conducting or voice. In registering for private lessons in voice, piano, organ, conducting or any orchestral instrument, “Voice” or the name of the instrument serves as the title of the course. For the final examination (excluding conducting), the student will perform before a faculty committee. May be repeated for credit without limitation.

595. Individual Lessons. 1 to 2 credits. Individual lessons in the major instrument, conducting or voice for the music education major. In registering for private lessons in voice, piano, organ, conducting or any orchestral instrument, “Voice” or the name of the instrument serves as the title of the course. For the final examination (excluding conducting), the student will perform before a faculty committee. May be repeated for credit without limitation.

596. Individual Lessons. 1 to 4 credits. Individual lessons in voice, piano or organ for the performance major. In registering for private lessons, “Voice” or the name of the instrument serves as the title of the course. For the final examination, the student will perform before a faculty committee. May be repeated for credit without limitation.

597. Special Projects. 1 to 3 credits. Individual study in an approved area of interest to the student.

598. Research in Music Education. 3 credits. An introduction to qualitative and quantitative research methodology relative to music education.

599. Graduate Recital. 2 credits. The presentation of a graduate recital.

418. Electronic Music Techniques. 2 credits.

430. Advanced Methods for the Teaching of Woodwind, Brass, and Percussion Instruments. 1 credit. For summer camps and workshops only.

437. Music Education for Elementary Teachers. 1 to 4 credits
Nursing

Professors Blaise, Burd, Downey, Gilje, Gullicks, Henly, Heuer, Juhl-Imler, Langemo, Lindsey, Meland, Milburn, Monnig (Graduate Director), Nichols, Szigeti, Wilhite

Program Description

The College of Nursing offers a National League for Nursing accredited graduate program leading to a Master of Science (M.S.) degree with a major in nursing and following the thesis or non-thesis options. Five areas of clinical specialization are offered:

1. Adult Health Nursing
2. Anesthesia Nursing
3. Family Nurse Practitioner
4. Rural Health Nursing
5. Parent-Child Nursing

The program is targeted to prepare clinical specialists, nurse educators or nurse administrators; and to expand the scientific knowledge of nursing practice through research.

Admission Requirements

1. A Bachelor’s degree in nursing from an NLN accredited program.
2. An undergraduate or graduate course in statistics.
3. A minimum GPA of 3.00 for the last two years of baccalaureate study.
5. A minimum of one year of experience as a registered nurse (preferred).
6. An undergraduate course in biochemistry (Biochemistry 301 or equivalent), one year of nursing critical care and a successful interview for those choosing Anesthesia Nursing specialization.
7. Successful interview for those choosing Family Nurse Practitioner specialization.
8. Meet current health and immunization requirements of the College of Nursing before being permitted to enroll in a clinical nursing program.

Applications for admission will be considered as they are completed except Anesthesia Nursing and Family Nurse Practitioners which are reviewed January 15. Students anticipating full-time study should plan on starting their course of study in the fall.

Clinical Specialization

The focus of the major is clinical specialization. The student also selects a functional role which offers preparation for nurse administrator, nurse educator or clinical nurse specialist roles. The thesis or non-thesis options are available for all clinical specializations. No residence requirement.

The Adult Health Nursing area of specialization requires a minimum of 36 credits, including: N500, 515, 516, 525, 530, 555, 559, 577, Physiology 512, and either N555, 560, or 565, plus six credits of electives.

The Anesthesia Nursing area of specialization, which is accredited by the Council on Accreditation of Nurse Anesthesiology programs, requires:

2. Additional clinical credits (N597) are required to meet CRNA certification eligibility.
3. Two years of full-time study are required.
4. Only the clinical nurse specialist functional role (N555) is available with Anesthesia Nursing, and the required Pharmacology courses support the functional role.

The Rural Health Nursing area of specialization requires a minimum of 37 credits, including: N500, 525, 530, 556, 557, 558, 580, 591, and either N555, 560, or 565, plus an additional six credits of electives.

The Parent-Child Nursing area of specialization requires a minimum of 37 credits, including: N500, 514, 518, 525, 530, 532, 533, 577, and either N555, 560, or 565, plus six credits of electives.

The Family Nurse Practitioner area of specialization requires a minimum of 57 credits, including: N500, 523, 525, 530, 532, 534, 535, 536, 539, 555, 586, and 597, Physiology 512.

Courses

500. Theories and Concepts in Nursing, 3 credits. The focus of this core course is on analysis of current nursing theories and concepts which guide clinical practice, curriculum development, research, and nursing administration.

501. Complementary Health Care Therapies, 3 credits. The 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.

514. Parent-Child Specialization: Practicum and Seminar I. 3 credits. Pre- or corequisites: Nursing 533. The course focuses upon the educator and researcher roles of the parent child clinical nurse specialist in providing advanced nursing care to client(s) and their families. Clinical application in acute care and community settings provides opportunities for the assessment of client(s) health status and appropriate nursing intervention and evaluation based upon nursing theory and research. Includes six hours of clinical experience weekly.

516. Advanced Adult Health Clinical Practicum and Seminar II. 3 credits. Pre- or corequisite: NURS 515 and PHYS 512. Advanced adult health nursing concepts applied to nursing problems in acute/critical care or long-term care setting. Includes six hours of clinical experience weekly.

517. Anesthesia Nursing Clinical Specialization Practicum and Seminar. 3 credits. Prerequisite: NURS 515 and consent of instructor; pre- or corequisite: NURS 530. Advanced anesthesia principles are applied to geriatric, pediatric, and obstetric clients. Concepts are applied in a variety of clinical situations. Includes clinical laboratory experiences.

518. Parent-Child Specialization: Practicum and Seminar II. 3 credits. Prerequisite: Nursing 533. The primary emphasis of this course is the intensive study of complex health problems of parent-child populations, and the human ecology context in which they occur. Role of advanced practice nursing in meeting health needs of this population is addressed. Includes six hours of clinical application each week.

523. Health Promotion Through the Lifespan, 3 credits. Prerequisites: NURS 556 and 586 or consent of instructor. Paragons in health promotion, health detection and disease prevention across the lifespan are used in the synthesis of theory and research-driven primary care interventions. A clinical/laboratory component is included.

525. Issues in Health Care Delivery, 3 credits. Prerequisite: Admission to Nursing or consent of instructor. The focus of this course is on comprehensive investigation and analysis of the issues and influences which challenge the profession of nursing and the delivery of health care by nurses prepared at an advanced level. Strengths and weaknesses of, threats to, and opportunities for nursing and health care delivery, particularly in rural America, will be examined.

530. Research Design and Methods in Nursing, 3 credits. Core course focused on examining the research process in nursing, critiquing nursing research, and writing a research proposal. Knowledge of statistical analysis is essential.

532. Family Theory and Assessment, 3 credits. Selected family theories, concepts, models and research will be introduced. Role theory will be examined from a family interaction and health care provider perspective. Emphasis is placed on the assessment of families across the life span. Concepts related to family integration and family adaptation patterns will also be examined.

533. Health and Illness in Childbearing and Childrearing, 3 credits. Responses of individuals and families to complex health problems during childbearing and childrearing are examined from perspective of mid-range concepts and theories in nursing. Emphasis is on use of standardized instrumentation for assessment and theory-based interventions.

534. Specialization in Family Nurse Practitioner I: Management of Acute/Emergent Conditions in Primary Care, 3 credits. Prerequisite: NURS 523.
Pharmacology and Toxicology

Professors Blake, Borg, Buckley, Epstein, Hein (Chair), Hulla, Martsolf, Saari

Program Description
The Department offers graduate programs in pharmacology and toxicology leading to the M.S. (thesis and non-thesis options), Ph.D., and M.D./Ph.D. degrees. Students who complete the program will be well prepared for a diversity of research and other professional careers in academia, industry, and government. Departmental research programs specialize in a number of areas of pharmacology and toxicology and the graduate program can be designed to emphasize either discipline. Research programs focus upon molecular and cellular aspects of biomedical research. Specific details are available from the department.

Pharmacology and toxicology are disciplines that focus upon the interaction of drugs and other chemicals with biological systems ranging from individual molecules, to cells, to tissues, to organ systems and to the whole organism. The two disciplines are a continuum incorporating the therapeutic to toxic effect of any drug or chemical. Our department programs incorporate both pharmacology and toxicology, and graduates are well trained to accept employment in either or both disciplines. Much of our research and curriculum also incorporate basic concepts of molecular biology, genetics, biochemistry, physiology, and other biomedical sciences, providing significant flexibility for our graduates.

Admission Requirements
1. Successful completion of undergraduate courses in biology, college algebra and chemistry, including organic chemistry.
2. Undergraduate courses in analytical chemistry, biochemistry, calculus, genetics, physiology, or statistics recommended.
3. Overall GPA of at least 3.0.
4. Graduate Record Examination—General Test or MCAT (Medical College Admission Test)
5. Students with a bachelor’s degree may be admitted directly into the Ph.D. program.

Financial Assistance
Many graduate students in the department, except those electing the non-thesis M.S. program, are supported by Graduate Research Assistantships with waiver of tuition and fees. Applicants are encouraged to complete their applications as early as possible to assure full consideration for financial assistance.

Degree Requirements
Master of Science (thesis or non-thesis)
1. Average of 40-50 hours of graduate credit.
2. Core courses: Biochemistry and Molecular Biology 500 or 501 and 510, Medical Physiology 523, Biochemistry 470, and Pharmacology and Toxicology 501, 502, 503, 504, 505, 506, 521, 593, 595.
3. For thesis option—Pharmacology and Toxicology 590 and 998.
4. For non-thesis option—Pharmacology and Toxicology 997, and a Special Topics or equivalent elective.
5. Minor or cognate—normally fulfilled with Biochemistry and Molecular Biology 500 and 510.
6. May include a pharmacology or toxicology emphasis.

Doctor of Philosophy
1. All course requirements for the master’s degree (thesis option), except 998.
2. Pharmacology and Toxicology 511 and 999.
3. Scholarly tool—Normally Biology 470 or equivalent.
4. Minor or cognate—normally met by Biochemistry and Molecular Biology 500 and 510.
5. May include a pharmacology or toxicology emphasis.

M.D./Ph.D. Program

The department also participates in the M.D./Ph.D. program. For further details, see page 175.

Courses

*501. Medical Pharmacology/General Principles and Toxicology. 1 credit. Prerequisite: Biochemistry and Molecular Biology 301 or equivalent. Introductory presentation of the basic principles of pharmacology and toxicology, including pharmacodynamics, pharmacokinetics, pharmacogenetics, drug-drug interactions, and drug and chemical toxicity. Fall Semester.

*502. Medical Pharmacology/Autonomic Nervous System. 1 credit. Pre- or corequisites: Physiology 301 and PhTx 501 or equivalent. Basic pharmacology of the drugs affecting the autonomic nervous system including mechanisms of action, pharmacokinetics, adverse reactions, and clinical uses. Fall Semester.

*503. Medical Pharmacology/Chemotherapy of Infectious and Neoplastic Diseases. 1 credit. Pre- or corequisites: Physiology 301 and PhTx 501 or equivalent. Basic pharmacology of drugs used in the treatment of infectious diseases and cancer, including mechanisms of action, pharmacokinetics, adverse reactions, and clinical uses. Fall Semester.

*504. Medical Pharmacology/Cardiovascular System. 1 credit. Pre- or corequisites: PhTx 501 and 502 or equivalent. Basic pharmacology of drugs affecting the cardiovascular system including mechanisms of action, pharmacokinetics, adverse reactions, and clinical uses. Fall Semester.

*505. Medical Pharmacology/Endocrine and Gastrointestinal System. 1 credit. Pre- or corequisites: PhTx 501 and 502 or equivalent. Basic pharmacology of drugs affecting the endocrine and gastrointestinal systems including mechanisms of action, pharmacokinetics, adverse reactions, and clinical uses. Spring Semester.

*506. Medical Pharmacology/Respiratory and Renal System. 1 credit. Pre-requisites: PhTx 501, 502, and 504 or equivalent. Basic pharmacology of drugs affecting the respiratory and renal systems including mechanisms of action, pharmacokinetics, adverse reactions, and clinical uses. Spring Semester.

*507. Medical Pharmacology/Central Nervous System and Musculoskeletal System. 2 credits. Prerequisites: PhTx 501 and 502 or equivalent. Basic pharmacology of drugs affecting the central nervous system and the musculoskeletal system including mechanisms of action, pharmacokinetics, adverse reactions, and clinical uses. Spring Semester.

511. Biochemical/Molecular Mechanisms of Pharmacology and Toxicology. 3 to 5 credits. Prerequisites: Biochemistry and Molecular Biology 500 or 501 and Physiology 301. Fundamental concepts of drug receptor interactions, dose-response relationships, pharmacodynamics, pharmacokinetics, pharmacogenetics, and toxicology. Biochemical and molecular mechanisms are emphasized. Consent of instructor required.

512. Special Topics in Pharmacology and Toxicology. 2 credits. An in-depth coverage of a particular topic chosen by the instructor. Topics and instructors vary semester to semester. Repeatable to eight credits. Consent of instructor required.

521. Seminar in Pharmacology and Toxicology. 1 credit. A series of presentations on original research, literature reviews and subspecialty areas in biomedical science given by faculty and students. Repeatable to eight credits. Consent of instructor required.

593. Research in Pharmacology and Toxicology. 1 to 12 credits. Participation in a research project under faculty supervision. May be repeated for credit. Consent of instructor required.

995. Teaching Practicum. 1 credit. The student will be given faculty supervised experience in lecture preparation and delivery, student evaluation, test construction, tutoring and preparation of teaching aids. Consent of instructor required.

996. Continuing Enrollment. Consent of instructor required.


999. Dissertation. 4 to 9 credits. Preparation and defense of a dissertation based on original research. Repeatable to eighteen credits. Consent of instructor required.

*Continued availability subject to curricular revision in School of Medicine and Health Sciences. Consent of department required.

Physical Therapy

Graduate Faculty: Professors Johnson, Mabey, P. Mohr, T. Mohr (Chair); Instructors: Jeno, Romanick

Program Description

The Department of Physical Therapy offers the clinically oriented, rural emphasis, entry level Master of Physical Therapy (M.P.T.) degree. Physical therapy is an allied health profession open to both men and women. Physical therapists are involved in the evaluation and treatment of many types of disabilities. They are employed by hospitals, rehabilitation centers, nursing homes, school systems, community health agencies, and in private practice.

Pre-Physical Therapy Requirements

1. The first two years of the following curriculum are considered to be pre-Physical Therapy.
2. Three to eight semester credits in elective course work and 59 credits of required courses. The department advises students to consider elective courses in the areas of psychology, management, principles of education or special education, or the specific Rehabilitation Services Concentration in the Department of Social Work.
3. All course work listed for the Pre-Physical Therapy portion must be completed or underway before applying to the professional program. Specifically, Physiology 301 and Anatomy 204 must be completed prior to selection.
4. Once course work is near completion, students must apply for the professional program. Wyoming residents and WICHE-eligible students must apply by invitation of UND-PT through the WICHE certification process. Selected out-of-state students may be eligible for Physical Therapy Individual Independent Contracts (PTIIC); inquiry should be addressed to the Admissions Coordinator at UND-PT. UND-PT does not accept applications for the professional program from any other out-of-state candidates unless they have completed all of the pre-P.T. course work at UND.
5. North Dakota residents are strongly encouraged to spend at least one year in pre-P.T. at UND.
6. Applications must be made no later than March 1 of the year the student wishes to enter the professional program.

Admission Requirements

1. Acceptance is on a competitive basis, with the major determinant being the basic science grade point average. The basic science GPA is defined as: biology (8 semester credits), chemistry (8 semester credits), anatomy (3 semester credits), physics (8 semester credits), psychology (7 semester credits—including Intro and Developmental), and physiology (4 semester credits).
2. Reference letters, a personal interview, and other personal qualifications are also considered prior to final acceptance.
3. Acceptance by the Office of Admissions does not constitute acceptance into the professional program in Physical Therapy.

Degree Requirements

1. The professional education component of the M.P.T. will require three academic years and one summer session following completion of the 61-66 credit pre-physical therapy entrance requirements.
2. No student will be allowed to remain in the program or complete the full-time clinical affiliation during Semester I of the second year unless he/she attains a letter grade of at least “C” in their major courses.
3. Acceptance into the graduate school requires:
   a. Acceptance into the professional P.T. program.
   b. Successful completion of professional education years 1 and 2 and each of the summer sessions between those years.
   c. Completion of the Graduate Record Examination, the Graduate School application forms and submission of undergraduate transcripts.

Physical Education

(See Kinesiology, pg. 206)
d. Letter of endorsement from the Chair of Physical Therapy which dictates automatic advancement in status and assures that the student will not be placed in double jeopardy.

4. Students in the professional program should be aware that there are special requirements for clinical uniforms and professional liability insurance that must be met prior to any clinical contact 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 affiliation semesters; the majority of these affiliation sites are at geographical locations other than the City of Grand Forks.

The faculty reserves the right to place on professional probation or to cancel the registration of any student in Physical Therapy whose performance in the classroom or the clinic is unsatisfactory.

Master of Physical Therapy

I. Graduation Requirements

See page 168 of this catalog for a description of the requirements for the non-thesis option for master’s degrees, including the Independent Study requirements and Comprehensive Examinations.

II. The following Curriculum:

Pre-Physical Therapy

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 101, 102 or 209 &amp; COMM 161</td>
<td>Communication</td>
<td>(9)</td>
</tr>
<tr>
<td>BIOL 101, 102</td>
<td>Introduction to Biology</td>
<td>(9)</td>
</tr>
<tr>
<td>CHEM 105, 106</td>
<td>Gen. Chemistry I, II (Qual. Analysis)</td>
<td>(8)</td>
</tr>
<tr>
<td>SOC 101</td>
<td>Intro to Sociology (or approved substitute)</td>
<td>(3)</td>
</tr>
<tr>
<td>PSY 101</td>
<td>Intro to Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>PHYS 101, 102</td>
<td>Intro to College Physics</td>
<td>(8)</td>
</tr>
<tr>
<td>ANAT 204</td>
<td>Anatomy for Paramedical Personnel</td>
<td>(3)</td>
</tr>
<tr>
<td>PHY 301</td>
<td>Mechanics of Human Physiology</td>
<td>(4)</td>
</tr>
<tr>
<td>PSY 251</td>
<td>Development Psychology</td>
<td>(4)</td>
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<tr>
<td>PT 101</td>
<td>Orientation to Physical Therapy</td>
<td>(1)</td>
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<tr>
<td>Electives (required)</td>
<td></td>
<td>(3-8)</td>
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Professional Program - Physical Therapy

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PT 309, 310</td>
<td>Medical Sciences I, II</td>
<td>(6)</td>
</tr>
<tr>
<td>PT 311</td>
<td>Orientation and Ethics</td>
<td>(1)</td>
</tr>
<tr>
<td>PT 312</td>
<td>Public Health and Medical Legal Aspects</td>
<td>(1)</td>
</tr>
<tr>
<td>PT 314</td>
<td>Bandaging, Aseptic and Isolation Techniques</td>
<td>(2)</td>
</tr>
<tr>
<td>PT 318</td>
<td>Techniques I: Theory and Techniques of Massage</td>
<td>(2)</td>
</tr>
<tr>
<td>PT 319</td>
<td>Techniques I: Theory and Techniques of Thermo-Photo-Hydrotherapy</td>
<td>(4)</td>
</tr>
<tr>
<td>PT 320</td>
<td>Research I: Research Methods</td>
<td>(2)</td>
</tr>
<tr>
<td>PT 322</td>
<td>Anatomy for Physical Therapy</td>
<td>(5)</td>
</tr>
<tr>
<td>PT 326</td>
<td>Introduction to Manual Therapy</td>
<td>(2)</td>
</tr>
<tr>
<td>PSY 370</td>
<td>Abnormal Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>PT 412</td>
<td>Muscle Function in Health and Disease</td>
<td>(4)</td>
</tr>
<tr>
<td>PT 413</td>
<td>Theory and Technique of Therapeutic Exercise I: Mobility-Strength-Endurance</td>
<td>(3)</td>
</tr>
<tr>
<td>PT 414</td>
<td>Theory and Technique of Therapeutic Exercise II: Muscle Control and Coordination</td>
<td>(3)</td>
</tr>
<tr>
<td>PT 417</td>
<td>Theory and Technique of Therapeutic Exercise III: Tests and Measurements—Specialized Exercise</td>
<td>(3)</td>
</tr>
<tr>
<td>PT 419</td>
<td>Techniques III: Theory of Electrotherapy and Electrodagnosis</td>
<td>(2)</td>
</tr>
<tr>
<td>PT 421</td>
<td>Administration—Physical Therapy</td>
<td>(2)</td>
</tr>
<tr>
<td>PT 423</td>
<td>Neuroscience for Physical Therapy</td>
<td>(3)</td>
</tr>
<tr>
<td>PT 482</td>
<td>Clinic I: Clinical Practice</td>
<td>(4)</td>
</tr>
<tr>
<td>PT 490</td>
<td>Special Topics</td>
<td>(1-4)</td>
</tr>
<tr>
<td>PT 491</td>
<td>Independent Study in Physical Therapy</td>
<td>(1-4)</td>
</tr>
<tr>
<td>PT 492</td>
<td>Psychological Aspects of Disability</td>
<td>(2)</td>
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<tr>
<td>PT 494</td>
<td>Research II: Clinical Conference and Paper</td>
<td>(1-2)</td>
</tr>
<tr>
<td>PT 511*</td>
<td>Applied Movement Science and Rehabilitation Procedures</td>
<td>(3)</td>
</tr>
<tr>
<td>EFR 515*</td>
<td>Statistics I (or substitute)</td>
<td>(3)</td>
</tr>
<tr>
<td>PT 525*</td>
<td>Techniques IV: Clinical Evaluation</td>
<td>(3)</td>
</tr>
<tr>
<td>PT 526*</td>
<td>Techniques V: Joint Mobilization/Soft Tissue Treatment</td>
<td>(2)</td>
</tr>
<tr>
<td>PT 534</td>
<td>Industrial Rehabilitation/Occupational Medicine</td>
<td>(2)</td>
</tr>
<tr>
<td>PT 535</td>
<td>Gerontology Seminar</td>
<td>(2)</td>
</tr>
<tr>
<td>PT 537</td>
<td>Strategies for Early Intervention</td>
<td>(2)</td>
</tr>
<tr>
<td>PT 538</td>
<td>Advanced Pediatrics Assessment and Treatment Techniques</td>
<td>(2)</td>
</tr>
<tr>
<td>PT 549</td>
<td>Advanced Applied Anatomy/Clinical Kinesiology</td>
<td>(2)</td>
</tr>
<tr>
<td>PT 552</td>
<td>Clinic II: Clinical Practice</td>
<td>(7-14)</td>
</tr>
<tr>
<td>PT 561*</td>
<td>Seminar: Physical Therapy (may repeat 4 times)</td>
<td>(4-4)</td>
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</table>

ELECTIVES: 2-5 credits

The required courses will be offered in the following sequence.

Professional Year 01—Fall Semester (16 cr.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PT 309</td>
<td>Medical Sciences I—3 credits</td>
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<tr>
<td>PT 311</td>
<td>Orientation and Ethics—1 credit</td>
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<tr>
<td>PT 314</td>
<td>Bandaging, Aseptic, and Isolation Techniques—2 credits</td>
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<td>Techniques I: Theory and Technique of Massage—2 credits</td>
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</tr>
<tr>
<td>PT 322</td>
<td>Anatomy for Physical Therapy—3 credits</td>
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<tr>
<td>PT 423</td>
<td>Neuroscience for Physical Therapy—3 credits</td>
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Professional Year 01—Spring Semester (19 cr.)

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<tr>
<td>PT 310</td>
<td>Medical Sciences II—3 credits</td>
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<tr>
<td>PT 312</td>
<td>Public Health and Medical Legal Aspects—1 credit</td>
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<tr>
<td>PT 319</td>
<td>Techniques II: Theory and Technique of Thermo-Photo-Hydrotherapy—4 credits</td>
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<td>PT 320</td>
<td>Research I: Research Methods—2 credits</td>
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<tr>
<td>PT 326</td>
<td>Introduction to Manual Therapy—2 credits</td>
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<tr>
<td>PT 412</td>
<td>Muscle Function in Health and Disease—4 credits</td>
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<tr>
<td>PT 413</td>
<td>Theory and Technique of Therapeutic Exercise II: Control and Coordination—3 credits</td>
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Professional Year 01—Summer Session (8 cr.)

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<tr>
<td>PT 413</td>
<td>Theory and Technique of Therapeutic Exercise I: Mobility-Strength-Endurance—3 credits</td>
<td></td>
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<tr>
<td>PT 417</td>
<td>Theory and Technique of Therapeutic Exercise III: Tests and Measurements—Specialized Exercise—3 credits</td>
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<tr>
<td>PT 419</td>
<td>Techniques III: Theory and Technique of Electrotherapy and Electrodagnosis—2 credits</td>
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</tbody>
</table>

Professional Year 02—Fall Semester (15 cr.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PT 482</td>
<td>Clinic I: Clinical Practice—14 credits</td>
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<tr>
<td>PT 494</td>
<td>Research II: Clinical Conference and Paper—1 credit</td>
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Professional Year 02—Spring Semester (14-17 cr.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EFR 515</td>
<td>Statistics—3 credits</td>
<td></td>
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<tr>
<td>PT 421</td>
<td>Administration—Physical Therapy—2 credits</td>
<td></td>
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<tr>
<td>PT 493</td>
<td>Psychological Aspects of Disability—2 credits</td>
<td></td>
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<tr>
<td>PT 526</td>
<td>Techniques V: Joint Mobilization/Soft Tissue Treatment—2 credits</td>
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<tr>
<td>PSY 370</td>
<td>Abnormal Psychology—3 credits</td>
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<tr>
<td>PT 494</td>
<td>Research II: Clinical Paper—1 credit</td>
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</tbody>
</table>

ELECTIVES: 2-5 credits

Professional Year 03—Fall Semester (12-16 cr.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PT 511</td>
<td>Applied Movement Science and Rehabilitation Procedures—3 credits</td>
<td></td>
</tr>
<tr>
<td>PT 525</td>
<td>Techniques IV: Clinical Evaluation—3 credits</td>
<td></td>
</tr>
<tr>
<td>PT 561</td>
<td>Seminar: Physical Therapy—1 credit</td>
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</tr>
<tr>
<td>PT 590</td>
<td>Directed Studies—1-12 credits</td>
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ELECTIVES: 4-8 credits

Professional Year 03—Spring Semester (16 cr.)

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PT 552</td>
<td>Clinic II: Clinical Practice—7-14 credits</td>
<td></td>
</tr>
<tr>
<td>PT 590</td>
<td>Directed Studies/Clinical Concepts—1-12 credits</td>
<td></td>
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<tr>
<td>PT 997</td>
<td>Research III—2 credits</td>
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</tr>
</tbody>
</table>

Courses

309. 310. Medical Sciences I, II. 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Disease groups discussed from all aspects of comprehensive rehabilitation. Included are chronic illness, neurologically and orthopedic conditions, general medicine and surgery, pediatrics, geriatrics, and sensory disabilities.

311. Orientation and Ethics. 1 credit. Prerequisite: Registered in Professional Physical Therapy Curriculum. Orientation to the clinic with emphasis on preparation of the patient for therapy. Professional ethics and professional literature will also be discussed. Laboratory.

312. Public Health and Medical Legal Aspects. 1 credit. Prerequisite: Registered in Professional Physical Therapy Curriculum. Discussion of the role of the Physical Therapist in the public health field, with attention to various state and federal health programs. Issues of licensure, documentation, legal liability are addressed.

314. Bandaging, Aseptic and Isolation Techniques, 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. The theory and practice of medical, aseptic and isolation techniques and principles of bandaging, taping, and splinting are discussed and practiced. Laboratory.


319. Techniques II. Theory and Technique of Thermo-Photo-Hydrotherapy. 4 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.

320. Research I: Return Methods, 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Lectures and practice in the proper use of research design, source material, elementary statistics, and scientific manuscript preparation.

322. Anatomy for Physical Therapy, 5 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Detailed lectures and demonstrations on neuromusculature and in anatomy of the extremities. Laboratory.

326. Introduction to Manual Therapy, 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Introduction to joint mobilization with emphasis on peripheral joints. Basic Evaluation treatment techniques and exercises for the lumbar and cervical spine. Laboratory.


413. Theory and Technique of Therapeutic Exercise I: Mobility-Strength-Endurance. 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Laboratory and lecture course in therapeutic exercise to establish and maintain muscular control and coordination. Laboratory.

415. Theory and Technique of Therapeutic Exercise II: Control and Coordination. 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Lectures and laboratory work in therapeutic exercise to increase and maintain mobility, strength, and endurance in the human body. Laboratory.

417. Theory and Technique of Therapeutic Exercise III: Tests and Measurements—Surgical Rehabilitation. 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Specific tests and measurements not covered in the other areas including tests and measurements of musculoskeletal and neurological systems as they relate to P.T. Laboratory.

419. Techniques III: Theory and Technique of Electrotherapy and Electrodagnosis. 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Theory and application of the use of low voltage electrical currents in physical therapy, including strength duration curves, electromyography, and nerve conduction velocity.

421. Advanced Theory—Physical Therapy, 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Lectures and discussion of administration procedures as they apply to the Physical Therapy Department.

423. Advanced Theory—Physical Therapy. 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Structure and function of the human nervous system including clinical application relevant to physical therapy practice.

511. Applied Movement Science and Rehabilitation Procedures. 3 credits. Prerequisites: 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 activities, equipment prescription, patient education, ADLs, as well as community mobility and governmental services. Laboratory.

525. Techniques IV: Clinical Evaluation. 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Specific clinical evaluation techniques including neurological testing, soft tissue assessment, joint mobility, and related written documentation of results.


530. Health Law for Health Care Providers, 2 credits. Discussion and readings course relevant to the “ordering” capability of law as it relates to health care. This course addresses the issues of quality of health care, risk management, health planning, access and “networking,” tort questions, and contemporary issues (bioethics, AIDS, press relations, drug screening) as they relate to health law. Emphasis is placed on the “continuum of care” concept, particularly in rural areas such as North Dakota.

534. Industrial Rehabilitation/Occupational Medicine, 2 credits. The integration of medical, industrial, and legal points of view in the prevention and management of work-related injuries.

537. Strategies for Early Intervention, 2 credits. Prerequisite: PT 415. This course is designed to provide current practices in early intervention. Course materials will focus on characteristics of disabling conditions that influence growth and development of motor skills, cognition and educational development. Emphasis will be on collaborative service provision with an interdisciplinary approach. Topics also covered include: current issues, assessment of the child/family unit and legislative guidelines for service provision.

538. Advanced Pediatrics Assessment and Treatment Techniques, 3 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Credit in PT 415. A course designed to review current practices in early intervention. Course materials will focus on characteristics of disabling conditions that influence growth and development of motor skills, cognition and educational development. Emphasis will be on collaborative service provision with an interdisciplinary approach. Topics also covered include: current issues, assessment of the child/family unit and legislative guidelines for service provision.

549. Advanced Applied Anatomy/Clinical Kinesiology, 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Laboratory course designed to review current practices in early intervention. Course materials will focus on characteristics of disabling conditions that influence growth and development of motor skills, cognition and educational development. Emphasis will be on collaborative service provision with an interdisciplinary approach. Topics also covered include: current issues, assessment of the child/family unit and legislative guidelines for service provision.

552. Clinic II: Clinical Practice. 7 to 14 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Full-time clinical practice affiliation in selected physical therapy provider centers, in and out of City of Grand Forks. Two nine-week segments, one of which is related to student area of Directed Studies, the other research or additional clinical.

561. Seminar: Physical Therapy, 1 to 4 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. This course serves to focus student attention toward graduate study in Physical Therapy. Explore and discuss areas of interest for student and faculty. May repeat up to 4 credits maximum.

562. Readings: Physical Therapy, 1 to 4 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Review of current literature pertinent to Physical Therapy; critical examination of design, content, and validity of conclusions.

570. Patient Education—Physical Therapy. 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. A review of the teaching/learning process with emphasis on techniques targeted to enhance patient involvement in their rehabilitation and physical therapeutic processes. Thirty hours of lecture, discussion, and project per semester.


582. Instrumentation for Physical Therapy, 2 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. The application of existing electrical and mechanical instrumentation theories and techniques to research and clinical practice in physical therapy.

590. Directed Studies/ Clinical Concepts, 1 to 12 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Individualized study of a particular area of interest for the student approved by his/her major advisor and supervised by preceptors with specialty and/or recognized expertise in the area of interest. Study may include library research, clinical research, discussion/seminars, projects and directed clinical experience. Serves as a basis for PT 997. Independent Study Report.

990. Continuing Education Workshops in Physical Therapy, 1 to 8 credits. Prerequisite: Registered in Professional Physical Therapy Curriculum. Credit in Physical Therapy may be granted for workshops, conferences, institutes, or other types of short-term activities, provided they have been approved for credit by the
Chairperson of Physical Therapy and the dean of the Graduate School. Written report of the activity is required. A one-week workshop shall carry no more than 1 semester hour of credit.

996. Continuing Enrollment/Physical Therapy. Credit arranged.

997. Research III. Independent Study Report. 2 credits. The Independent Study Report in Physical Therapy is designed to require the student to independently generate a written report relevant to his/her Directed Studies/Clinical Concepts area of interest. The topic must be approved by the student’s major advisor/preceptor. Approval is effected by completion of the form entitled, “Outline of Independent Study” and submitting the outline to his/her advisor/preceptor for approval. The Independent Study is designed to require the student independently to investigate a topic related to Physical Therapy and to the area of interest of the student. 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. The requirement is to ensure that a student can investigate a topic and organize a scholarly report on the investigation. The Report should be of a formal nature. The outline should be on file in the Graduate School no later than the end of Fall Semester, Year 03.

Physics

Professors Chen, Dewar, Henriksen, Kim, Lykken, Rao (Chair), M. Schwalm, W. Schwalm, Wagner

Program Description

The Department of Physics offers graduate programs leading to the Master of Science and Doctor of Philosophy degrees. Current research in the department emphasizes solid state physics, atomic and molecular physics, astrophysics, and health physics. Departmental facilities permit both theoretical and experimental research investigations.

Admission Requirements

1. Completed a minimum of 21 semester credits of undergraduate physics, plus mathematics through differential equations or the equivalent.
2. Course work should include intermediate courses in mechanics, electricity and magnetism, optics, thermal physics, and modern quantum physics. Adequate preparation in general chemistry also is necessary.
3. An applicant without satisfactory undergraduate training 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. Ph.D. applicants are encouraged to submit the Graduate Record Examination scores for the general test and advanced physics test.

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 the writing of a 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 course work 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 course work, 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. Student 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 currently 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 Schrödinger 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. Electromotistatics, 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. Prerequisite: 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.
590. Research. Credit arranged
428. Modern Physics Laboratory. 2 credits.
431. Introductory Quantum Physics. 3 credits.
434. Nuclear Physics. 3 credits.
437. Introductory Solid State Physics. 3 credits.
466. Introduction to Astrophysics. 3 credits.
490. Special Problems. 1 to 3 credits.
Physiology

Professors Bode (Graduate Director), Brown-Borg, Haselton, Samson (Chair), Vari

Program Description

The degrees of Master of Science and Doctor of Philosophy are offered by the Department of Physiology.

The goal of the physiology graduate program is to educate students in areas of research and teaching. The graduate is prepared to teach basic medical, graduate, and undergraduate physiology at a university, medical school, or college. The graduate is also trained and prepared to conduct and direct basic mammalian physiologic laboratory research in educational institutions, industry, foundations, and/or government.

Admission Requirements

Master of Science

1. Chemistry—8 credit hours, including organic and/or biochemistry (2 semesters equivalent to UND 300 or above) and the courses which normally precede organic chemistry. A laboratory is not required.
2. Physics—8 credit hours, at a 200 level minimum.
3. Biology—one course beyond the introductory level—introductory biology is considered one course of two semesters, but may include anatomy or embryology (101/102 over two semesters with one additional course at the 300 level or above).
4. Grade point average for all undergraduate courses—2.75 minimum. Grade point average for the last two years (undergraduate)—3.00 minimum.
5. Graduate Record Examination—General Test.

Doctor of Philosophy

1. Master’s degree or equivalent with a GPA of at least 3.50.
2. Graduate Record Examination—Scores on General and Advanced tests (biology or chemistry or cognate).

Degree Requirements

Master of Science

1. Minimum of 20 credits of graduate work in the major area and a minimum of 10 credits in a cognate drawn from related areas. These areas include, but are not limited to, human anatomy, biochemistry, pharmacology, biology, and psychology.
2. Students must prepare a thesis based on results from experimental research.
3. Experience in teaching physiology is required before the degree is granted.
4. After approximately one year of graduate work for the Master of Science degree, a student may request admission to the Doctor of Philosophy program. To change programs, the physiology faculty must approve and the student must successfully complete a set of diagnostic-qualifying examinations administered by the department.

Doctor of Philosophy

1. Acceptable knowledge of physiology, anatomy, biochemistry, pharmacology, chemistry, physics, mathematics, instrumentation, experimental design, and computer techniques.
2. Teaching experience is required and can be obtained within the department.
3. Biometry (Biology 470).
4. One of the following areas must be presented as a scholarly tool for the Ph.D. degree:
   a. Foreign language
   b. Statistics
   c. Computer Programming, or
d. Statistics and computer programming.
5. Complete a dissertation based on the results of original laboratory research.
6. Students may select a cognate or a minor from related fields.

Courses

502. Physiology of the Central Nervous System. 3 credits. Prerequisites: Physiology 527 and/or consent of instructor. The emphasis in this course is the correlation of the structure, function and chemistry of the cerebral hemispheres. Of particular interest are the relationships of behavioral changes to electrophysiological and chemical changes and the interactions of cellular tract systems to the whole physiological measurement systems used to assess brain functions.
503. Advanced Physiology. Credits arranged. Prerequisite: Physiology 523 or 652 and/or consent of instructor.
505. Introduction to Surgical Techniques. 2 credits. Three to six laboratory hours a week. Prerequisite: consent of instructor.
512. Theory of Physiology. 5 credits. Prerequisite: Physiology 301 or equivalent and consent of instructor. 6 hours of lecture. This course is designed for graduate students in allied health fields. An exploration of the normal basic functions or organ systems separately and integrated in whole activities.
521. Seminar in Physiology. 1 credit.
523. Medical Physiology for Graduate Students. 8 credits. Availability subject to curricular revision in School of Medicine and Health Sciences. Consent of department required.
525. Renal Physiology. 1 to 3 credits. Prerequisites: Physiology 523 or 652 and/or consent of instructor.
526. Respiratory Physiology. 1 to 3 credits. Prerequisites: Physiology 521 or 512 and/or consent of instructor.
527. Neurophysiology. 1 to 3 credits. Prerequisites: consent of instructor.
528. Endocrinology. 1 to 3 credits. Prerequisites Physiology 523 or 652 and/or consent of instructor.
529. Cardiovascular Physiology. 1 to 3 credits. Prerequisites: Physiology 523, 550, Problems, Credits arranged.
529. Research in Physiology. Credits arranged.

Psychology

Professors Antes, Ferraro, Foster, Grabe (Chair), Holm (Graduate Director), King, McDonald, Peters, Petros, Plaud, Till, Tyler, Vogeltanz, Zevenberg

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.
6. 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. General-Experimental Psych.—In the third year, demonstrate competence to complete a dissertation through the completion of three scholarly projects.
a. A Grant Proposal submitted to possibly fund the student’s dissertation. Successful funding will not be required to pass this portion of the examination.

b. Two broad integrative reviews and/or theoretical papers in the style of the Psychological Catalog, or the Psychological Review that demonstrate the student’s ability to master and integrate a wide range of the scientific literature in significant content areas of Scientific Psychology. The expectation is that these papers will be suitable for publication and should be submitted. However, actual publication will not be required.

The two review/theoretical papers will not serve as substitutes for the literature review and preliminary theoretical work the student does for their dissertation. The intention of the review projects is to demonstrate the breadth and depth of the student’s understanding of Psychology as a science. Thus, these projects are viewed as a probing way of determining the depth and breadth of the student’s abilities in, and understanding of, the science. Narrowly focused projects will not be acceptable for the purposes of the two integrative projects.

The student, in association with their advisor and supervisory committee, will submit a proposal for the specific contents of these projects to the General-Experimental faculty. As a general principle, the projects will address areas that are professionally relevant for the student, but in which the student does not already have an extensive background. The General-Experimental faculty will have responsibility for approving the proposals and for grading the finished projects. Recommendation for advancement to the Doctoral Candidacy upon completion of the projects, is a function of the entire General-Experimental faculty.

c. Normal progress will be demonstrated by completing the three projects by the end of the third year of graduate training, or by the end of the first year after being admitted into the Ph.D. program in General-Experimental Psychology.

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 having the undergraduate preparation noted in the paragraph above, must also have completed a course in statistics and an undergraduate laboratory course in Experimental Psychology. No specific courses are required for the graduate minor except that one-half of the total credits 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, development, and personality.

505. History of Psychology. 3 credits. Prerequisite: Graduate standing in Counseling or Psychology. Historical development of modern psychology with an emphasis on experimental 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 Psychology or Counseling. An examination of the evidences in support of the various systematic theories of learning.

535. Physiological Psychology. 3 credits. Physiological basis of psychological functions.

539. Cognitive Psychology. 3 credits. Prerequisite: Graduate status in psychology or permission of instructor. An in-depth analysis and discussion (including laboratory work) of topics covering issues related to memory, attention, problem solving, comprehension, 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. Statistics for Psychology. 3 credits. Prerequisites: Graduate standing and Psych 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: Graduate status in Psychology or permission of instructor. An in-depth analysis and discussion of topics covering the entire lifespan, from Genetic and Prenatal influences to Death and Dying.

560. Advanced Social Psychology. 3 credits. Prerequisites: 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.

570. Clinical Assessment I. Basic Issues in Clinical Assessment. 3 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 indices and interviewing skills. Serves as a graduate foundation to explore, analyze, and discuss basic and applied issues relevant to psychological testing, the administration and interpretation of widely-used intellectual assessment instruments, and the opportunity to develop structured clinical interviewing techniques.

571. Clinical Assessment II. Advanced Issues in Clinical Assessment. 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 human behavior in relation to personality assessment, behavioral assessment, neuropsychological assessment, and the assessment of high incidence behavioral disorders. Skills in report writing and case conference presentation will also be developed.

572. Community Psychology. 3 credits. Prerequisites: Psychology 571, 573, and graduate standing in Psychology. Theories and practicum in community mental health consultation. Credits in 587 may be earned in conjunction with this course.

573. Theories of Psychotherapy. 3 credits. Prerequisites or corequisite: Psychology 571 and/or consent of instructor. Theory and practicum in individual psychotherapy, with emphasis on systematic comparison of major theoretical viewpoints.

575. Behavior Pathology. 3 credits. Prerequisites: Psychology 370 and consent of instructor. A survey of various forms of behavior pathology with emphasis upon current research and theories relating to pathology.

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 techniques of individual psychotherapy, marital therapy, counseling, and guidance of parents and children, administration of psychological examinations, behavior modification, community 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.

589. 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 instructor. 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 Coker, M. Kweit (Chair), R. Kweit (Graduate Director), Markovich, Pedeliski, Pynn

Program Description

The Master of Public Administration program and degree are offered by the Department of Political Science and Public Administration.
The purposes of the M.P.A. program are to prepare students for positions in the public service and to increase the skills of persons already in the public service. The program achieves these purposes through a multidisciplinary curriculum 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 trains the students to apply basic administrative principles in public management.

Admission Requirements

1. Graduate Record Examination General test or the Graduate Management Admission Test.
2. Minimum competence in public administration policy, administrative services, and methodology. This competence is normally demonstrated by at least one course in each of five fields (Political Science, Accounting, Economics, Management, and Statistics), by special exams in the fields, or by practical experience.
3. Twenty hours in the social sciences, business administration, 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.
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 8 credits may be transferred to UND from other institutions.
5. The following are required courses:
   - P.SCI. 500 Research Methods 3 credits
   - P.SCI. 501 Political & Policy Analysis 3 credits
   - P.SCI. 531 Seminar: Public Administration 3 credits
   - P.SCI. 597 Independent Study 2 credits
   - P.SCI Electives 12-21 and/or
     Up to 9 credits in cognate/elective courses.

A thesis option is also available. See page 167 for 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 effected by the student’s completing a form titled Outline of Independent Study, available from the Graduate School, and submitting the outline to the advisor for approval. The outline, 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 Registrar’s Office.

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 Outline of Independent Study and submitting the Outline 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.

Courses

500. Research Methods. 3 credits. Prerequisite: A statistics course or consent of instructor. This course will first focus on 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 then introduce techniques of empirical research including research design, measurement, data gathering, and data analysis.

501. Political and Public Policy Analysis. 3 credits. Prerequisite: Political Science 500 or consent of instructor. This course focuses on the use of empirical data both to develop empirical theory and to make policy choices. Topics to be discussed include hypothesis testing, public choice, and policy evaluation. Students will be required to complete an original research project.

502. Seminar: Problems in State and Local Governments. 3 credits. Prerequisite: Political Science 402 or consent of instructor. Directed in-depth inquiry into contemporary structural and policy problems of state and local governments. During the course, each student will prepare a research paper relevant to a current problem suitable for publication and distribution to an identifiable body of public officials and citizens for problem-solving purposes.

508. Seminar: Legislative and Executive Processes. 3 credits. Description, analysis, and evaluation of the structures, processes, procedures, and positions of the legislative and executive offices in government.

511. Seminar: Political Theory. 3 credits. Prerequisite: Political Science 311 or consent of instructor. Study of major political theories and the methodologies employed in their formulation.

531. Seminar: Public Administration. 3 credits. An extensive overview of Public Administration stressing the basic conceptions and trends in the discipline as well as the classic scholars.

532. Public Policy. 3 credits. A discussion of the initiation, formulation, adoption, implementation, and evaluation of American public policy. Various policy areas such as agriculture, education, environment, and welfare will be analyzed.

535. Public Organizations. 3 credits. Description and analysis of bureaucratic organizations with particular emphasis on concepts and characteristics common to public bureaucracies.

537. Administering the Public Bureaucracy. 3 credits. Introduces the graduate student to the dynamics of public personnel administration and public sector...
The contrasting norms and behaviors of participants, their impacts on policy, and the implications for government are examined. Specific processes include financial control, performance appraisal and intergovernmental interaction.

539. Administrative Law...CSWE. Study of the legal dimension of public administration. Study of requirements for rule-making and adjudication and of judicial review of administrative decisions.

580. Administrative Internship...in on-the-job learning situations in federal, state, or local government. Students are required to make an analytical report on some facet of their work.

591. Readings in Political Science and Public Administration...3 credits. Prior approval of instructor required before enrollment. Selected readings with oral and written reports.

593. Problems in Political Science and Public Administration...3 credits. Prior approval of instructor required before enrollment. Students study special topics under the direction and supervision of a member of the staff.

595. Professional Development in Public Administration...3 credits repeatable to 3. Specific issues will vary but topics will focus on the latest issues, trends, problems facing administrators, especially those in public and not-for-profit agencies.

404. Urban Politics and Administration...3 credits.

405. Political Behavior...3 credits.

433. The Administrator and Public Affairs...3 credits.

308. Intergovernmental Relations...3 credits.

Reading Education
(see Education: Reading Education, p. 195).

Social Work
Professors Furman, Haagenstad, Haga, Heitkamp, Jacobsen (Chair), Klinkhammer, Kraft, Muhlhauser, Perry, Woehle (Graduate Director)

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 degree is designed to prepare social workers for employment in a wide variety of human services agencies including family service organizations, child welfare agencies, health and mental health settings, and public social service agencies. The Master of Social Work degree 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.

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. Those who do not meet this requirement may be admitted, but will not be allowed to enroll in graduate social work research courses until the requirement is met.

4. Submission of a statement delineating qualifications and reasons for pursuing an MSW degree. This includes:
   a. Motivation for being a social worker.
   b. Values and beliefs as they relate to social work,
   c. Experience with people from diverse social and cultural backgrounds.
   d. Qualities the applicant can bring to the social work profession.
   e. Personal qualities as related to leadership and creativity.
   f. The process of problem solving used to make the decision to enter social services.

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. References should include:
   a. A direct supervisor of work in a recent job, preferably a social service job.
   b. An undergraduate academic advisor or someone else who is able to evaluate academic work.
   c. A nonrelative who can address potential for the social work profession.

6. 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.

Advanced Standing
Applicants who have received baccalaureate degrees in social work from CSWE accredited programs within five years of their acceptance for the MSW program and have a GPA of 3.00 or better for that degree may have up to 21 hours of foundation credits waived.

Students with CSWE accredited degrees granted more than five years before acceptance may petition to take challenge examinations in one or more of the foundation courses, except field courses. If all foundation courses except field are successfully challenged, foundation field courses will be waived. However, any student taking one or more foundation courses must also take the foundation field courses.

Students must have a grade of B or better in foundation courses for that degree may have up to 21 hours of foundation credits waived. Students with CSWE accredited degrees granted more than five years before acceptance may petition to take challenge examinations in one or more of the foundation courses, except field courses. If all foundation courses except field are successfully challenged, foundation field courses will be waived. However, any student taking one or more foundation courses must also take the foundation field courses.

Students with CSWE accredited degrees granted more than five years before acceptance may petition to take challenge examinations in one or more of the foundation courses, except field courses. If all foundation courses except field are successfully challenged, foundation field courses will be waived. However, any student taking one or more foundation courses must also take the foundation field courses.

Students must have a grade of B or better in foundation courses for Advanced Standing is required. The foundation courses 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 586, Field Instruction I
- SWK 587, Field Instruction II

Applicants who believe they are eligible to take challenge examinations 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.

Degree 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, and SWK 514.

3. Satisfactory completion of the advanced generalist concentration including SWK 520, SWK 521, SWK 523, SWK 524, SWK 525, SWK 531, SWK 535 or SWK 536, SWK 547, SWK 588, and the specialized portion of the concentration including SWK 561 and four credits of related electives, as well as SWK 997 or SWK 998.

4. Completion of the courses in the recommended sequence unless other arrangements are negotiated.

5. Completion of 900 clock hours of field instruction (SWK 586 and SWK 587 or equivalents, and SWK 588).

6. Completion of a thesis or independent study.

7. Completion of at least 24 semester credits (60 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 early in the semester in which the student first enrolls in concentration courses.
Thesis Option
1. Students completing a thesis must establish a Faculty Advisory Committee by the end of the semester in which the student first 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 student first enrolls in concentration courses.

Non-Thesis Option
1. Students completing an independent study must select an advisor and submit an outline of the study by the end of the semester in which the student first enrolls in concentration courses.
2. Students completing an independent study must complete a final comprehensive examination administered by the department.

Candidacy for the Degree.
Please see page 167 for detailed 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 foundation course uses ecological/social systems theory as the overall conceptual framework. Bio-psycho-socio-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.

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 foundation knowledge, values, and skills for generalist social work practice. Course components include the problem solving process from a strengths perspective and the use of self appropriate to generalist practice. The course presents the content from a ecological system perspective and focuses on intervention with the various micro, middle and macro client systems. The course also serves as a basis for advanced generalist social work practice.

512. Foundation Social Work Practice Skills Lab. 2 credits. Prerequisites: Formal admission to the MSW program. Corequisite: SWK 511. The purpose of this course is to provide the opportunity to apply the knowledge and values gained in SW 511 to simulated case situations. This course focuses on enhancing interpersonal relationship skills necessary for advanced generalist social work practice.

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 beginning understanding of the institution of social welfare, its historical landmarks, and the values and ideology that influence its formulation. Students will also learn about the composition of the disadvantaged in the United States, and the programs that benefit them. The course will also provide an analytic model to evaluate social welfare policies.

514. Social Work Research I. 2 credits. Prerequisites: Formal admission to the MSW program or consent of instructor. This course provides an overview of qualitative and quantitative research methods commonly utilized in social work settings. Special emphasis is placed on techniques related to evaluation of professional practice, program evaluation, and research conducted with diverse populations.

520. Human Behavior in the Social Environment II. 2 credits. Prerequisites: SWK 510; advanced standing in the MSW program or consent of instructor. This course is intended to provide students with beginning understanding of the institution of social welfare, its historical landmarks, and the values and ideology that influence its formulation. Students will also learn about the composition of the disadvantaged in the United States, and the programs that benefit them. The course will also provide an analytic model to evaluate social welfare policies.

521. Advanced Generalist Social Work Practice. 3 credits. Prerequisites: SWK 511 and SWK 512 or advanced standing in the MSW program. The purpose of this course is to provide knowledge, values and skills necessary for social work intervention with diverse populations in this region. As the first course in the advanced generalist practice sequence, the focus of the course will include the interventive roles required across the problem solving process within a strengths, ecological and systems perspective.

523. Social Welfare Policy II. 2 credits. Prerequisites: SWK 513; advanced standing in the MSW program or consent of instructor. This course provides an in-depth understanding of the social welfare institution, with emphasis on the issues and processes of social policy formulation in the regional context. Policy practice is presented as an important component of social work practice. Students will also learn various models of policy analysis, and the structure and functions of the judiciary and legislature of the United States.

524. Social Work Research II. 2 credits. Prerequisites: SWK 514; advanced standing in the MSW program or consent of instructor. Corequisite: SWK 525. This course is designed to develop an understanding of both qualitative and quantitative data analysis in the context of this region. The course will address the paradigmatic context of social work research. Ethical, epistemological, ontological, methodological and technological issues are included. Statistical procedures and computers are utilized.

525. Proposal Writing. 1 credit. Prerequisites: SWK 514; advanced standing in the MSW program or consent of the instructor. Corequisite: SWK 524. This course addresses skills related to writing proposals for research, program evaluation and practice evaluation. Emphasis is on research and evaluation with the diverse populations of the region. Applications of quantitative or qualitative research methodology, and use of APA style, are required.

531. Social Work Practice with Micro Systems. 3 credits. Prerequisites: SWK 521; Corequisites: SWK 535 or SWK 536. The purpose of this course is to provide the social work knowledge, values and skills necessary for advanced generalist social work practice with individuals in groups and families. In particular, this course is designed to provide the knowledge about intervention models and clinical supervision used in social work practice with individuals, families, and personal groups. An opportunity for skills development will be provided in the practice lab.

535. Social Work Practice with Communities. 2 credits. Co-requisite: SWK 531. This course provides advanced generalist practice directed toward neighborhood, community and societal change. Particular attention is given to the development of knowledge, values and skills related to social planning, policy development and community organization processes such as community development and social action.

536. Social Work Practice with Organizations. 2 credits. Co-requisites: SWK 531. This course provides advanced generalist practice directed toward task groups and complex organizations. Particular attention is given to the development of knowledge, values, and skills related to practice and program evaluation, organizational development, consultation and personnel management including administrative supervision.

547. Professional Seminar. 2 credits. Co-requisite: SWK 588. The purpose of this seminar is to help the student integrate the theoretical knowledge they have acquired with through their practice experience and to explore the professional issues they have encountered in their educational experience.

560. Special Problems. 1-3 credits.

561. Fields of Practice. 2 credits. This course provides an overview in one of the specialized fields of practice approved by the Department of Social Work. Selected fields of practice are offered depending on student demand.

586. Field Instruction I. 5 credits. Prerequisite: admission to the program. This beginning practicum is a concurrent placement designed to enable the student to develop effective problem-solving skills in relation to individuals, groups, family, the community and/or the organizations which deliver social services. Students will be expected to demonstrate self-directed learning skills in addition to problem-solving interpersonal skills and personal awareness competencies. S/U Grading.

587. Field Instruction II. 5 credits. This course is a continuation of Field Instruction I. The emphasis is on developing a more effective use of self with a diverse population of clients and the further integration of practice for use. There is an emphasis on accurate analysis of the problem situation and the development and implementation of appropriate interventions with client systems. S/U Grading.

588. Field Instruction III. 10 credits. Prerequisites: SWK 535 or SWK 536. Corequisite: SWK 547. The advanced field practicum course is completed in a setting other than that utilized in Field Instruction I and II. As a block placement, it may require considerable absence from campus. Students are expected to demonstrate advanced problem solving and interactive skills in an autonomous manner with increasing complex situations.

593. Individual Study. 1-2 credits, repeatable for a maximum of 4 credits. Prerequisites: Consent of instructor. Variable topics in social work related areas carried out individually or in small groups under the supervision of the instructor.

997. Independent Study. 1-2 credits.

998. Thesis. 4-9 credits.

Sociology

Program Description
Thirty graduate 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 thinking, social theory, research design, and research 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. The program emphasizes two different tracks: predoctoral or sociological practice. Students in both tracks take a common core of courses, but the emphasis in their cognates differ.
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 CTL 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 page 164 for a definition of Residence.)

Courses

500. 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.

512. Advanced Sociological Theory, 3 credits. Prerequisite: Sociology 511. A critical look at problems of theory development and construction, emphasizing historical social theorist.

520. Advanced Research Design, 3 credits. Prerequisites: Sociology 323 and 326. This course emphasizes the development of research design skills including research survey.

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 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 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.

599. Individual Research, 1 to 4 credits. Maximum of six credits.

407. Political Sociology, 3 credits.

409. Computer Applications, 3 credits.

430. Sociology of Education, 2 to 3 credits.

431. Organizations and Behavior, 3 credits.

432. Racial and Ethnic Relations, 3 credits.

436. Social Inequality, 3 credits.

437. Population, 3 credits.

450. Deviant Behavior, 3 to 4 credits.

497. Practicum in Sociology, 3 credits

498. Readings in Sociology, 1 to 5 credits.

498. Thesis, 4 to 9 credits.

Space Studies

Professors Gabrynowicz (Graduate Director), Jensen, Seielstad, Williams, Wood (Chair)

Program Description

The Department of Space Studies offers a program leading to a Master of Science degree. This interdisciplinary program is a policy oriented study of the implications of humankind’s entry into space: the social, political, and legal impacts, on a national and international level, that are associated with the evolutionary development of a new frontier away from Earth. In addition, the biomedical and ecological effects of long-term, or continuous stay-times in a micro or low gravity environment, will also be emphasized, as will the new information and possibilities of global management afforded by remote sensing satellites looking back at Earth.

The program is designed to prepare the student for positions in both the commercial and governmental sectors of the rapidly growing field of space exploration, development and settlement.

Admission Requirements

1. A baccalaureate degree with a major in one of the following fields: Engineering, Science, Business, Social Science, Communication and Information Systems.

2. One course in statistics, calculus, or computer programming language (Computer Science 201, 260, 323, or equivalent) at the college level.

3. One course in sociology, psychology, or political science.

4. One course in science.

Degree Requirements

Courses 501 (3 credits), 997 (2 credits), and two additional courses in the policy area, as well as two courses in the technical area, are required of all students. Beginning students should contact the department advisor for information about general course requirements. Students must choose a permanent advisor by the end of the second semester of enrollment, or nine months before they expect to graduate, so that they may plan and formalize the remainder of their academic programs. Candidates must pass a comprehensive written exam to complete the program.

A minor in Space Studies consists of 9 hours including SpSt 501(3), one additional lecture course (3), and 3 credit hours of other work with the approval of the Space Studies faculty.

1. Space Studies 501 (3 credits) and 997 (2 credits).

2. Two courses in the policy area.

3. Two courses in the technical area.


A minor in Space Studies consists of 9 hours including SpSt 501, one additional lecture course, and 3 credit hours of other work with the approval of the Space Studies faculty.

Courses

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 analysts as they track the 7000 satellites which orbit the earth. The course gives the students an ability to converse, 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 multinational 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/co-requisite to all other 500 level courses.

515. Human Factors in Space, 3 credits. A review of the major stresses 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: Split 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.

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 course is expected to reach ten trillion bits in the next decade. Knowing 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 needs and use will grow exponentially once the space station and associated facilities are in operation.

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 species rather than single-nation activity. What effect does, and 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. Strategic Implications of Space. 3 credits. An analysis of the increasing strategic importance of space to the superpowers and other nations. The course deals with both the surveillance/reconnaissance mission and the introduction of offensive and defensive weapons into space.

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. Corequisites: Split 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 6 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.


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.

430. Earth System Science. 3 credits.

435. Global Change. 3 credits.

440. Commercialization of Space. 3 credits.

450. Soviet/Russian Space Program. 3 credits.

COURSE DESIGNATIONS

POLICY AREA COURSES: 440, 450, 545, 555, 565, 575.


Special Education
(See Education: Special Education, p. 196).

Speech-Language Pathology

Professors Fire, Hess, Madden, Swisher (Chair), Wagner

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. The master’s degree program has been accredited by the Council on Academic Accreditation 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.

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 Disorders.
3. Admittance to approved status typically requires an undergraduate major in Communication 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 course work 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
d. Quality of speaking, writing, and interpersonal skills.
6. Admissions applications should include documentation of their qualifications relative to the criteria above.
7. Admissions for summer and fall enrollment and the award of financial aid will be based on applications completed by February 15.

Degree Requirements

1. The typical program of study includes the following courses: 522, 525, 531, 532, 533, 535, 536, 537, 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 CTL 400, Methods and Materials for Speech Clinicians, and CDIS 585, Practicum in the School Setting.
5. Graduate students already having a teaching credential with some other major must take CTL 400 and practicum in a school before being recommended for employment in a school.

Courses

501. Seminar in Speech-Language Pathology-Audiology, 1 to 3 credits Prerequisite: Consent of instructor.
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.

531. Clinical Audiology I, 3 credits. Prerequisites: CDIs 431 or consent of instructor. Advanced audiological concepts and techniques including speech audiometry, masking, bone conduction, advanced pure tone testing, pediatric hearing evaluation, and the psychoacoustical bases of audometric assessment.

532. Adult Neurogenic Communication Disorders, 3 credits. Prerequisites: CDIs 231 and 522. Investigation of the nature, differential diagnosis, and treatment of neurologically-based speech and language disorders (aphasia, apraxia, dysarthria, cerebral palsy, and other disorders).

533. Investigations in Child Language, 3 credits. Prerequisites: CDIs 343. Student formulation of 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: CDIs 231 and CDIs 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 Intervention, 3 credits. Prerequisite: CDIs 436. 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 CDIs 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.


542. Child Neurogenic Communication Disorders, 2 credits. Prerequisite: CDIs 522. An overview of cerebral palsy and other neuromuscular disorders including consideration of evaluation techniques and oral and non-speech/ augmentative communication systems.

552. Motor Speech Disorders, 2 credits. Prerequisite: CDIs 532. A study of the diagnoses and management of motor speech disorders, including dysarthria, apraxia, and dysphasia.

562. Augmentative/Alternative Communication, 3 credits. Prerequisites: CDIs 522 and CDIs 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: CDIs 383. Administration and interpretation of diagnostic instruments for evaluation of communication problems, interviews, case histories, and parent counseling.

584. Advanced Clinical Practicum, 3 to 16 credits. Prerequisites: CDIs 485 and consent of instructor. Provision of clinical services to individuals with communication disorders under the supervision of an ASAA certified supervisor. Placement will be at the UND Speech-Language-Hearing Clinic or a departmentally-approved external site.

585. Practicum in the School Setting, 1 to 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 human auditory functioning; practice involving interviews, case histories and client counseling.

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. Prerequisite: Consent of the instructor. An examination of special topics in communication disorders.

599. Independent Study, 2 credits.

998. Thesis, 4 credits.

343. Language Development and Disorders I, 1 to 4 credits.

533. Language Development and Disorders II, 1 to 3 credits.

431. Introduction to Audiology, 3 credits.

434. Auditory Training and Speech Reading, 3 credits.

497. Special Problems in Communication Disorders, 1 to 3 credits.

Teaching and Learning

(See Education: Teaching and Learning, p. 196).

Theatre Arts

Professors Cutler, Engle (Graduate Director), Gillette (Chair), Jacobsen, Lindberg

Program Description

The Department of Theatre Arts offers graduate study leading to a Master of Arts degree. The student may select a special area of emphasis such as directing, design and technical theatre, playwriting, children’s theatre, literature, or history. Course work 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. A minor or cognate field of study in visual arts, music, English, communication, or other related fields is available.

Admission Requirements

1. Twenty-three credits of undergraduate course work 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:

   TA 500.00 Introduction to Graduate Research 2 credits
   TA 501.01 Sem. in Dramatic Lit. I 3 credits
   TA 501.02 Sem. in Dramatic Lit. II 3 credits
   Total 8 credits

2. Minimum of 6 credit hours in the production areas, i.e., Acting, Directing, and Design and Technical Theatre courses.

3. Minimum of 6 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 TA 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 course work completed by the student.

Courses


501. Seminars in Theatre Arts, 1 to 3 credits. Seminars in Dramatic Theory, Theatre History, Dramatic Literature, 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.

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.

595. Research Problems in Theatre, 1 to 3 credits. Prerequisite: consent of instructor. Individual study under the direction of the graduate faculty.

328. Acting II, 3 credits.

336. Lighting for Stage II, 2 credits.

339. Production Design, 3 credits.

402. Acting III, 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, 3 credits.

424. History of the Theatre: Seventeenth Century to the Present, 3 credits.

425. Play Direction II, 3 credits.

426. Scene Design for the Stage, 3 credits.

498. Playwriting, 3 credits.
Visual Arts

Professors Auyong, Fundingsland, Kelley, Luber, McCreery, McElroy-Edwards (Chair), Meyers, Miller, Monsebroten, Paulsen, Schaefer (Graduate Director)

Program Description

The Master of Fine Arts degree program in Visual Arts is a strongly studio-oriented professional preparation in the media areas of ceramics, drawing, metalsmithing, painting, printmaking, and sculpture with ample opportunity (and encouragement) for balancing study in art history, and supporting media areas and disciplines, both within and outside the visual arts areas.

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 Department of Visual Arts 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:
   - Category Credits
     - Major Media Area (Ceramics, Painting, Drawing, Metalsmithing, Printmaking, Mixed Media, or Sculpture) 30
     - Art History and Theory 9
     - Electives (including at least 12 credits in visual arts) 18
     - Professional Exhibition 3

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 graduation include:
      - a. Preparation of a Graduation Exhibition, which will be a formal presentation of creative work.
      - b. An exhibition catalog which will include the artist’s statements and reproductions of the work.
      - c. A slide portfolio of the Graduation Exhibition must be submitted to the Department of Visual Arts for its permanent files.

   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 VA 599—Professional Exhibition (3 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 department of Visual Arts. 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 3.0.
   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 written study in three dimensional form, media, and methods. Repeatable to 30 credits.
510. Art History: Contemporary Trends and Theory. 2 credits. Presentation and contemporary trends in the visual arts from the 1960s forward and discussion of contemporary theory and criticism.
511. Graduate Seminar. 1 credit repeatable to 2 credits. Group critiques of graduate student work conducted by faculty and visiting artists. Presentation of faculty work and discussion of contemporary issues as appropriate.
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 to drawing skills and techniques, both innovative and traditional. Emphasis on individual exploration. Repeatable to 30 credits.
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. Metalsmithing: 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.
581. 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 by-passing 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. Art History: Selected Topics. 1 to 4 credits.
412. Art History: 20th Century to (1930’s). 3 credits.
413. Art History: 20th Century (1930’s to present). 3 credits.
414. Art History: 20th Century 1960-present. 2 credits
415. Art History: Museum Internship. 1 to 3 credits.
416. Art History: Italian Renaissance. 3 credits.
417. Art History: Northern Renaissance. 3 credits.
418. Art History: Baroque Art and Architecture. 3 credits.
419. Art History: 19th Century. 3 credits.
490. Individual Research/Special Projects. 1 to 6 credits. Repeatable to twelve credits.

496. Fine Arts: Symposium in the Arts. 1 to 3 credits.

Vocational Education
(See Business and Vocational Education, p. 182)
Administration and Faculty

STATE BOARD OF HIGHER EDUCATION

The University of North Dakota is a part of the North Dakota University System consisting of eight publicly supported colleges and universities and three branch campuses. The State Board of Higher Education, constitutionally responsible for the management of the University, is final authority in all matters affecting the University exercising 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

CYNTHIA KALDOR, Hillside, term expires June 30, 1998
PAUL EBELTOFT, Dickinson; term expires June 30, 1999
JOSEPH PELTIER, Arthur; term expires June 30, 2000
JEANNE SATROM, Oskaloosa; term expires June 30, 2001
JOHN HOEVEN, JR., Minot; term expires June 30, 2002
BEV CLAYBURGH, Grand Forks; term expires June 30, 2003
CRAIG CASPER, Washpeton; term expires June 30, 2006* Chancellors of Higher Education: LARRY A. ISAAC, Bismarck
*Terms were changed from seven to four years by the North Dakota State Legislature in 1997, effective with the appointee in 1997.

ADMINISTRATION

**KENDALL L. BAKER, Ph.D., President
ROB CAROLIN JR., Director, Enrollment Services
BRUCE GOVIG, B.S., Director, Center for Innovation and Business Development
GERALD H. GREENWOLD, Ph.D., Director, Energy and Environmental Research Center
SALLY PAGE, M.B.A., Affirmative Action Officer
JAMES P. PENWARDEN, B.A., Director, Office of University Relations
TIMOTHY RERICK, B.S.B.A., Internal Auditor
EARL STRINDEN, M.A., Executive Vice President, UND Alumni Association and Foundation
DAVID VORLAND, M.S., Executive Assistant to the President
TERRY WANLESS, Ed.D, Director, Athletics

MARLENE I. STRATHIE, Ph.D., Vice President for Academic Affairs and Provost

Deans reporting to the academic vice president:

ROBERT BOYD, Ed.D., Dean, Outreach Programs
W. JEREMY DAVIS, J.D., LL.M., Dean, School of Law
JOHN ETTING, Ph.D., Dean, College of Arts and Sciences
MARY HARRIS, Ph.D., Dean, College of Education and Human Development
BRUCE JACOBSEN, Ph.D., Dean, College of Fine Arts and Communication
HARVEY KNULL, Ph.D., Dean, Graduate School
ELIZABETH G. NICHOLS, D.N.S., Dean, College of Nursing
JOHN ODEGARD, M.S., Dean, Center for Aerospace Sciences
DON RICHARD, Sc.D., Dean, School of Engineering and Mines
TO BE ANNOUNCED, Dean, College of Business and Public Administration

Other administrators reporting to the academic vice president:

JEANNE ANDEREGG, M.L.S., Coordinator, Honors Program
FRANK D’ANDRAIA, M.L.S., Director, Libraries
CATHY BUYARSKI, M.S., Director, Student Academic Services
CARL FOX, Ph.D., Director, Office of Research and Program Development
DAVID MARSHALL, Ph.D., Director, International Programs
JEREL PAVLEY, M.A., Lieutenant Colonel, Professor, Military Science
ALICE C. POEHL, Ph.D., Director, Office of Admissions & Records
LIBBY RANKIN, Ph.D., Director, University Writing Program
SHARON REZAC ANDERSEN, B.A., Coordinator, International Center
DEAN SCHIEVE, Ph.D., Director, Office of Instructional Development
KATHY SMART, Ed.D., Director, Center for Instructional and Learning Technologies

H. DAVID WILSON, M.D., Dean, School of Medicine & Health Sciences
EUGENE L. DEORME, J.D., Director, Indians Into Medicine (INMED) Program
JUDY L. DEORME, M.Ed., Associate Dean, Student Affairs & Admissions
RANDY EKEN, Associate Dean, Administration & Finance
WARREN C. KEENE, M.D., Assistant Dean and Director, Health Education, Minot
PAMELA D. KNUDSON, B.A., Director, Public Affairs

KAP J. LEE, D.V.M., Director, Biomedical Research Facility
ERIC CUNN, M.D., Assistant Dean & Director, Health Education, Grand Forks
LOUISE A. MURPHY, M.D., Assistant Dean & Director, Health Education, Bismarck
THOMAS E. NORRIS, Ph.D., Executive Associate Dean, Academic Affairs & Research
RICHARD A. OLAFSON, M.D., Associate Dean for Veteran Affairs and Assistant Dean & Director of Health Education, Fargo
LILA A. PEDERSEN, M.A.L.S., Director, Harley French Library of the Health Sciences
KEITH A. STENHJEM, Ph.D., Director, Biomedical Communications
H. DAVID WILSON, M.D., Interim Director, Rural Health

LYLE REISWENGER, R.S.B.A., Vice President for Finance
ALICE BREKKIE, M.Acc., Director, Budget and Grants Administration
PAT HANSON, B.S.B.A., Director, Payroll
PEGGY LUCKE, B.S.B.A., Controller, Accounting Office
DIANE NELSON, B.A., Director, Personnel Services
WANDA SPORBERT, B.S., Manager, Business Office
DALE VETTER, B.S.B.A., Director, Computer Center
AL. HOFFARTH, R.S.B.A., Vice President for Operations
DONALD FORBES, B.S.B.A., Manager, University Bookstore
MELVIN FOSTER, Supervisor, Mailing Services
RICHARD GANYO, Director, Printing Center
DELORES JACOBSON, B.A., Administrative Officer
RICHARD LEHN, Director, Telecommunications
MARGARET MURRIS, B.S., B.A., Accountant
LEROY SONDROIL, Director, Physical Plant
JAMES UHLIR, Director, Auxiliary Services
TERRY WEBB, M.A., Director, Residence Services

GORDON HENRY, Ed.D., Vice President for Student Affairs
LILLIAN ELSINGA, M.A., Associate Vice President for Student Affairs
MERLE CHARNEY, M.S.H.A., Director, Student Health Service
RICHARD GROZS, Ed.D., Director, Counseling Center
ALICE HOFFERT, M.S.Ed., Director, Student Financial Aid
LEIGH JEANOTTE, Ed.D., Director, Native American Programs
MARYANNE LUSTGRAAF, M.Ed., Director, Memorial Union
MARK THOMPSON, B.A., Director, Career Services
TO BE ANNOUNCED, Director, Multicultural Student Services

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.

**BAKER, KENDALL L., President of the University and Professor of Political Science, Ph.D., Georgetown University

A

ABRITT, DAVID W., Assistant Professor of Neuroscience; M.D., Tulane University
ABDULLAH, KAY, Assistant Professor of Surgery; M.D., Indiana University
**ABRAHAMSON, HARMON B., Professor and Chairperson of Chemistry; Ph.D., Massachusetts Institute of Technology
AHLEN, MICHAEL J., Professor of Law; J.D., Vanderbilt
**AHLER, JANET, Professor of Educational Foundations and Research; Ph.D., University of Missouri
**ALLI MAHIR, Associate Professor and Chairperson of Computer Science; Ph.D., Nottingham University, U.K.
ALLEVA, PATTH, Associate Professor of Law; J.D., Hofstra University School of Law
**ANDEREGG, MICHAEL A., Professor of English and Chester Fritz Distinguished Professor; Ph.D., Yale University
ANDERSON, CINDY, Clinical Assistant Professor of Nursing; M.S., University of North Dakota
**ANDERSON, DALE A., Assistant Professor of Health, Physical Education and Recreation; M.S., University of Minnesota

*adjunct graduate faculty status
**full graduate faculty status
ANDERTON, JOHN, Assistant Professor of Geography; Ph.D., University of Wisconsin-Madison

**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

**APANIAN, RONALD A., P.E., Professor and Chairperson of Civil Engineering; Ph.D., Oklahoma State University

ARAIZ, RICHARD, Assistant Professor of Neuroscience; M.D., University of Illinois

ASKIM, MARY KAY, Assistant Professor of Marketing; M.S., North Dakota State University

**AUYONG, ELLEN ROSE, Professor of Visual Arts; M.A., University of Missouri-Columbia

B

**BACKES, JOHN, Associate Professor of Educational Leadership; Ed.D., University of North Dakota

* BAGHERI, FATHOLLAH, Assistant Professor of Economics; Ph.D., University of Pennsylvania

BAIRD, JOHN R., Associate Program Director of Fargo Family Practice Center and Assistant Professor of Family Medicine; M.D., Washington University

**BAKERBIG BACK, CLARICE, Assistant Professor of Teaching and Learning; M.Ed., Pennsylvania State University

BAKKEN, JEROME, Assistant Professor of German-Languages; Ph.D., University of Minnesota

**BALLINTINE, THOMAS A., Associate Professor of Chemistry; Ph.D., Southern Illinois University

**BANDYOPADHYAY, BISWANATH P., Professor of Mechanical Engineering; Ph.D., People’s Friendship University, Moscow

**BARKÉ, CHARLES, Associate Professor and Chairperson of Counseling; Ph.D., University of Kansas

BARENSTEIN, CARL, Associate Professor of Humanities; D.A., Idaho State University

**BARENSTEIN, SHELBY, Assistant Professor of Teaching and Learning; Ed.D., University of California-Los Angeles

**BASS, GERALD, Professor and Chairperson of Educational Leadership; Ed.D., University of North Dakota

BASS, GAIL S., Instructor; M.S., University of North Dakota

BATEMAN, CONNIE RAE, Assistant Professor of Marketing; M.B.A., University of North Dakota

**BEARD, MICHAEL, Professor of English; Ph.D., Indiana University

**BEARD, VICTORIA, Assistant 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

BECKER, WILLIAM K., Associate Professor of Surgery and Director of Surgery Residency Program; M.D., University of Minnesota

**BENJAMIN, NAGY, Professor of Electrical Engineering and Chairperson of Department; Ph.D., University of Calgary

BENOIT, VIRGIL, Associate Professor of Languages; Ph.D., University of Minnesota

BENSON, SANDRA, Clinical Associate Professor of Nursing; M.S., University of Minnesota

BERG, CAROL, Assistant Professor of Nursing; M.S., University of Arizona

**BERGER, ALBERT, Associate Professor of History; Ph.D., Northern Illinois University

**BERINGER, RICHARD E., Professor of History, Chair of Department and Chester Fritt Distinguished Professor; Ph.D., Northeastern University

* BERNE, JANE, Assistant Professor of Languages; Ph.D., University of Illinois at Urbana-Champaign

**BIBEL, GEORGE, Associate 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, Associate Professor of Economics; Ph.D., University of Kansas

BIRGER, C. JUDITH, Clinical Instructor of Statewide Psychiatric Nursing Education Program at Jamestown, College of Nursing; M.S., University of North Dakota

**BJERKE, MARILYN R., Clinical Assistant Professor of Nursing; M.S., University of North Dakota

**BLACKWELL, J. LLOYD III, Professor of Economics; Ph.D., Georgia State University

* BLAISE, TRISH, Assistant Professor of Nursing; Ph.D., University of California, San Francisco

BLAKE, MICHAEL J., Assistant Professor of Music; M.Ed., University of North Dakota

**BLAKE, MICHAEL J., Associate Professor of Pharmacology and Toxicology; Ph.D., Marquette University

BLAUFSUSS, MARK C., Assistant Professor of Pediatrics, M.D., Washington University

**BODE, ANN, Associate Professor of Physiology; Ph.D., University of Oregon

BONN, KATHLEEN, Assistant Professor of Teaching and Learning; Ph.D., Indiana University, Bloomington

**BORDEN, WILLIAM V., Professor of English and Chester Fritz; Distinguished Professor; M.A., University of California

* BORG, KURT E., Research Assistant Professor of Pharmacology and Toxicology; Ph.D., North Carolina State University

**BORGERING, ANTHONY, Assistant Professor of Chemistry; Ph.D., Indiana University

BOTT, ALEXANDER J., Professor of Law; J.D., Fordham University

BRIDTWESIER, WAYNE, Assistant Professor of Internal Medicine; M.D., University of Iowa Medical School

BRIDDEWELL, JOHN, Associate Professor of Aviation; MDIV, Southwestern Baptist Theological Seminary

BRIGGS, BRIAN T., Assistant Professor of Surgery; M.D., University of Washington

**BRINKERT, RONALD, Associate Professor and Chairperson of Health, Physical Education, and Recreation; Ph.D., University of Oregon

BROCK, GORDON, Assistant Professor of Music; M.M., Michigan State University

**BRONSON, JAMES, Assistant Professor of Management; Ph.D., Washington State University

BROUSSEAU, JAMES D., Associate Professor of Community Medicine and Rural Health and Clinical Associate Professor of Internal Medicine; M.D., University of Minnesota

BROWN, ANN, Assistant Professor of Pathology; M.D., University of North Dakota

**BROWN-BORG, HOLLY, Assistant Professor of Physiology; M.D., North Carolina State University

**BRUCE, A. WAYNE, Program Director of Clinical Laboratory Science, Professor of Pathology and Co-Director of Laboratory Education for North Dakota; Ph.D., University of Minnesota

**BUCKLEY, ARTHUR R., Associate Professor of Pharmacology and Toxicology; Ph.D., University of Arizona

BUETTNER, ANN M., Assistant Professor of Internal Medicine; M.D., Rush Medical College

Burd, Christine, Assistant Professor of Nursing; M.S., University of North Dakota

Burd, Larry J., Assistant Professor of Neuroscience and Pediatrics; M.S., Eastern Montana College

BURRELL, JAMES, Assistant Director of Grand Forks Family Practice Center and Assistant Professor of Family Medicine; M.D., University of Minnesota

BYRAM, DEBRA J., Assistant Professor of Occupational Therapy; M.A., University of North Dakota

C

CARIVEAU, THOMAS B., Assistant Director of Grand Forks Family Practice Center and Assistant Professor of Family Medicine; M.D., University of North Dakota

**CARLSON, C. GEORGE, Adjunct Assistant Professor of Physiology; Ph.D., SUNY Upstate Medical Center

CARLSON, DAVID L., Assistant Professor of Neuroscience; M.D., University of North Dakota

**CARLSON, EDWARD C., Chairperson of Department and Professor of Anatomy and Cell Biology; Ph.D., University of North Dakota

**CARLSON, STEVEN J., Associate Professor of Accounting and Business Law; Ph.D., University of Arkansas
CARSON, PAUL, Assistant Professor of Internal Medicine; M.D., University of North Dakota

* CARMICHAEL, JEFFREY, Assistant Professor of Biology; Ph.D., University of Georgia

** CARSON, SHARON, Associate Professor of English; Ph.D., University of Washington

** CAYHUN, FKRET, Professor of Economics; Ph.D., Wayne State University

** CHACKO, JACOB, Associate Professor of Marketing; D.B.A., United States International University

** CHALMERS, LYNN, Associate Professor and Chairperson of Teaching and Learning; Ph.D., University of North Dakota

** CHEN, TAR-PIN, Associate Professor of Physics; Ph.D., State University of New York

Chelliah, Noah N., Associate Professor of Internal Medicine; M.D., Christian Medical College, Vellore, South India

** CHONG, JOHN KING-SHUN, Associate Professor of Management; Ph.D., Mississippi State University

Christian, Stephanie J., Clinical Assistant Professor of Nursing; B.S.N., University of North Dakota

Chu, Anthony, Associate Professor of Internal Medicine; M.D., University of Minnesota

Clarens, Richard D., Associate Professor of Family Medicine and Pharmacology and Toxicology; Pharm. D., University of Minnesota

Clay, Daniel L., Assistant Professor of Family Medicine; Ph.D., University of Missouri

** Clingan, Edmund, Assistant Professor of History; Ph.D., University of Wisconsin-Madison

Cole, Duane R., Associate Professor of Physics; M.A., University of South Dakota

** Coleman, Joyce, Assistant Professor of English; Ph.D., University of Edinburgh

Coleman, Mary L., Instructor of Pathology; B.S., University of North Dakota

** Collings, John, Assistant Professor of Mathematics; Ph.D., Washington State University

Cooke, Paula, Assistant Professor of Aviation; Ph.D., University of North Dakota

Cooley, Albert Marvin, Associate Professor of Pathology; M.D., Northwestern University

* Crawford, Glinda, Associate Professor of Sociology; Ph.D., Iowa State University

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BREKKE-BAILEY, BEVERLY, Professor Emeritus, Special Education
BALE, HAROLD, Professor Emeritus, Physics
BARNEY, WILLIAM G., P.E., Professor Emeritus, Mechanical Engineering
BEHRINGER, MARJORE P., Professor Emeritus, Biology
BEHSMAN, ERVIN, Associate Professor Emeritus, Secondary Education
BENDER, MYRON, Professor Emeritus, Industrial Technology
BLACKMORE, MAE MARY, Instructor Emeritus, Center for Teaching and Learning
BLOOMQUIST, ROGER J., Professor Emeritus, Business and Vocational Education
BOEHLER, WILLIAM R., Professor Emeritus, Music
BOGAN, LOUIS D., Associate Professor Emeritus, Health, Physical Education and Recreation
BOLONCHUK, WILLIAM, Associate Professor Emeritus, Health, Physical Education and Recreation
BOSTROM, DONALD, Associate Professor Emeritus, Accounting and Business Law
BOSTROM, JOY, Associate Professor Emeritus, Family and Consumer Sciences
BOWSUAU, HERBERT, Associate Professor Emeritus, Languages
BROWN, RALPH C., Professor Emeritus, Geography
BRUMLEVE, STANLEY J., Professor Emeritus, Physiology
BRUSIMMER, JOHN G., Professor Emeritus, Chemistry
BURRAGE, RUTH, Professor Emeritus, Nursing
BZIOCH, RONALD C., Professor Emeritus, Mathematics
Caldwell, MARY ELLEN, Associate Professor Emeritus, English
CAPE, JULIA P., Assistant Professor Emeritus, English
CHRISTOFE RSON, LEE A., Professor Emeritus, Neuroscience
CLARK, ALICE T., Professor Emeritus, Psychology, Dean Emeritus, Graduate School; Vice President Emeritus for Academic Affairs
CLIFFORD, THOMAS J., President Emeritus, Dean Emeritus, College of Business and Public Administration, and Professor Emeritus, Accounting and Business Law
COLLINS, BEN L., Professor Emeritus, English
COR NATER, WILLIAM EUGENE, Chester Fritz; Distinguished Professor and Professor Emeritus, Biochemistry
CORY, MARGARET HEYSE, Dean Emeritus, College of Nursing
CRAWFORD, JOHN, Professor Emeritus, English
CURRY, MABEL L., Professor Emeritus, Home Economics and Nutrition
CURRY, MYRON C., Associate Professor Emeritus, Speech
CVANCARA, ALAN M., Professor Emeritus, Geology and Geological Engineering
DAS, GOPAL, Professor Emeritus, Internal Medicine
DAWES, KENNETH, Professor Emeritus, Social Work
DE BOER, BENJAMIN, Professor Emeritus, Physiology and Pharmacology
DEL BUSTO, MODESTO R., Professor Emeritus, Languages (Spanish)
DIXON, JOHN, Professor Emeritus, Electrical Engineering
DUIERRE, JOHN A., Professor Emeritus, Microbiology and Immunology
DUNNING, RALPH, Professor Emeritus, Family Medicine
EICKHOFF, LUVERN R., Associate Professor Emeritus, Industrial Technology
ENGEL, DEAN, Professor Emeritus, Communication Disorders
FISCHER, ROBERT G., Professor Emeritus, Microbiology and Immunology
FLETCHER, ALAN G., Dean Emeritus and Professor Emeritus, Engineering and Mines
FOSSUM, GUILFORD O., Professor Emeritus, Civil Engineering
FOSHER, KEITH, Associate Professor Emeritus, School of Medicine
FREIN, GEORGE, Professor Emeritus, Philosophy and Religion
GAD, ELDON, Professor Emeritus, Counseling
GALLANT, RUTH, Professor Emeritus, Education, Elementary Education, Center for Teaching and Learning
GARD, WILLIAM G., Associate Professor Emeritus, History
GEORGACAS, BARBARA, Associate Professor Emeritus, Languages (Classics)
HAGER, OSWALD M., Associate Professor Emeritus, Business and Vocational Education
HALAS, EDWARD S., Professor Emeritus, Psychology
HALE, RICHARD O., Associate Professor Emeritus, English
HAMEL, RICHARD J., Dean Emeritus, Enrollment Services; Assistant Professor Emeritus, Counseling
HAMMOND, GEORGE R., Assistant Professor Emeritus, Aviation
HAMPSTEN, RICHARD, Associate Professor Emeritus, English
HILL, RICHARD, Professor Emeritus, Educational Administration
HISEY, PHILIP D., Associate Professor Emeritus, Music
HOLLENDEN, ROBERT, Professor Emeritus, Geology
HOLL EMBECK, ROBERT, Associate Professor Emeritus, Secondary Education
HOOTMAN, LA VINNE RUSSELL, Professor Emeritus, Nursing
HOWELL, FRANCIS, Professor Emeritus, Physics
JACOBS, FRANCIS A., Professor Emeritus, Biochemistry and Molecular Biology
JACOBY, ARTHUR P., Professor Emeritus, Sociology
JENSEN, CALVIN, Professor Emeritus, Family Medicine
JENSEN, IVAN, Professor Emeritus, Civil Engineering
JOHNSON, A. WILLIAM, Professor Emeritus, Chemistry
JORGENSEN, LAVERNA, Associate Professor Emeritus, Health, Physical Education and Recreation
JOSHI, MADHUSUDAN, Professor Emeritus, Medicine
KANNOWSKI, PAUL, Professor Emeritus, Biology
KEE K, ARNOLD W., Assistant Professor Emeritus, Physical Therapy
KELLEHER, JAMES, Professor Emeritus, Microbiology and Immunology
KEMPER, GENE A., Associate Vice President Emeritus for Academic Affairs; Professor Emeritus, Mathematics
KEMPER, ROBERT W., Associate Professor Emeritus, Accounting and Business Law
KETTERLING, LA ROSE, Associate Professor Emeritus, Family and Consumer Sciences
KING, ROBERT W., Professor Emeritus, Elementary Education and English
KIELMYR, HELEN, Associate Professor Emeritus, Management
KOHNS, DONALD, Professor Emeritus, Business and Vocational Education
KOLSTOE, RALPH, Professor Emeritus, Psychology
KORSMO, RICHARD, Associate Professor Emeritus, Accounting and Business Law
KOTCH, ALEX, Professor Emeritus, Chemistry
KRAUS, OLEN, Professor Emeritus, Physics
KRUEGER, JACK N., P.E., Professor Emeritus, Electrical Engineering
KULAS, LUDWIG, Professor Emeritus, Accounting and Business Law
LAIRD, WILLIAM M., Professor Emeritus, Geology, and State Geologist Emeritus
LARSON, EDITH E., Professor Emeritus, Biology
LARSON, OMAR, Professor Emeritus, Biology
LAWRENCE, GERALD, Associate Professor Emeritus, Humanities and Integrated Studies
LESER, ESTHER H., Professor Emeritus, Languages
LIND, AMY, Professor Emeritus, Occupational Therapy
LINDQUIST, MARY, Associate Professor Emeritus, Special Education
LINKLETTER, C. MONTE, Professor Emeritus, English
LOW, FRANK, Chester Fritz; Distinguished Professor and Professor Emeritus, Anatomy
LUNDBERG, STUART, Associate Professor Emeritus, Accounting and Business Law
MANZ, OSCAR, Professor Emeritus, Civil Engineering
MARWIN, RICHARD M., Professor Emeritus, Microbiology and Immunology
MAUCH, PATRICIA, Associate Professor Emeritus, Health, Physical Education and Recreation
MAULAND, LYLE E., Professor Emeritus, Mathematics
MBRIDE, WOODROW, Associate Professor Emeritus, Mathematics
MCCAFFREY, DONALD, Professor Emeritus, English
MELDRUM, ALAN H., Professor Emeritus, Industrial Engineering
MERRILL, LOIS, Dean Emeritus, College of Nursing
MESSENGER, THEODORE, Professor Emeritus, Philosophy and Religion
MILLER, JACK L., Associate Professor Emeritus, Music
MORGAN, WILLIAM, Professor Emeritus, Languages
MULLINS, ROBERT, Professor Emeritus, Philosophy
MURASKI, MURRAY, Professor Emeritus, Physics
MURRAY, STANLEY N., Professor Emeritus, History
NAISMITH, DONALD P., Professor Emeritus, Mechanical Engineering
NELSON, EDWARD O., Professor Emeritus, Mathematics
NOLL, JOHN O., Professor Emeritus, Psychology
NORMAN, ERNEST J., Professor Emeritus, Social Work
NORMAN, VIRGINIA L., Associate Professor Emeritus, Nursing
O’REILLY, EARL, Professor Emeritus, Chemistry
OBERPRILLER, JOHN O., Professor Emeritus, Anatomy and Cell Biology
OECHSLE, LOIS, Associate Professor Emeritus, Nursing
OMDAHL, LLOYD B., Professor Emeritus, Political Science and Public Administration
OSLUND, VALBORG, Associate Professor Emeritus, English
OWEN, JOHN B., Professor Emeritus, Biology
PANCA, LOUIS, Professor Emeritus, Languages (Classics)
PARMA R, SURANDRA S., Chester Fritz; Distinguished Professor and Professor Emeritus, Physiology
PATTERSON, CHANNING F., Associate Professor Emeritus, Languages
PEDESEN, MYRTLE, Professor Emeritus, English
PEDESEN, CLARA A., Professor Emeritus, Center for Teaching and Learning
PENN, JOHN S., Dean Emeritus, Summer Sessions and Professor Emeritus, Speech
PETerson, MARIlyn, Associate Professor Emeritus, Health, Physical Education and Recreation
PETerson, RUSSELL A., Chester Fritz Distinguished Professor and Professor Emeritus, Center for Teaching and Learning
PETerson, SUSAN, Professor Emeritus, History
POLOVITZ, MICHAEL F., Professor Emeritus, Music
PORTER, DONALD, Associate Professor Emeritus, Management
POTTER, GERALD, Associate Professor Emeritus, Philosophy and Religion
PRICE, NEIL, Associate Professor Emeritus, Library Science and Audiovisual
QUADAY, JOHN, Professor Emeritus, Health, Physical Education and Recreation
RAY, PAUL, Professor Emeritus, Biochemistry and Molecular Biology
READ, TAMAR, Professor Emeritus, Music
RHONEMUS, GRACE O., Associate Professor Emeritus, Health, Physical Education and Recreation
ROBINSON, THOMAS, Professor Emeritus, Mathematics
ROGERS, JOHN H., Professor Emeritus, Visual Arts
ROWE, CLAIR, D., Dean Emeritus, College of Business and Public Administration, and Professor Emeritus, Marketing
RUE, JAMES S., Professor Emeritus, Mathematics
Rundell, GLENN, Professor Emeritus, Music
Rykker, MARJorie B., Professor Emeritus, Nursing
Saint Clair, FOSTER Y., Professor Emeritus, English
Salaua, Sundar, Professor Emeritus, Geology and Geological Engineering
Schubert, GEORGE, Professor Emeritus, Communication Disorders; Dean Emeritus, University College and Summer Sessions
SchmieS, ELMER, Associate Professor Emeritus, Physics
Scott, Rachel Shields, Associate Professor Emeritus, Nursing
Scott, Thomas, Professor Emeritus, Counseling
Seabloom, ROBERT, Professor Emeritus, Biology
Severson, DONALD E., Chester Fritz Distinguished Professor and Professor Emeritus, Chemical Engineering
Severson, ROLAND G., Professor Emeritus, Chemistry
Shurr, Agnes G., Professor Emeritus, Nursing
Smith, Glenn H., Professor Emeritus, History
SnooK, THEodore, Professor Emeritus, Anatomy
Soonpaa, Henn, Professor Emeritus, Physics
Steinmeier, LYLE, Professor Emeritus, Accounting and Business Law
Stenberg, Virgil J., Professor Emeritus, Chemistry
Stewart, JAMES A., Professor Emeritus, Chemistry
Summers, lawrence, Professor Emeritus, Chemistry
Swenson, John, Associate Professor Emeritus, Internal Medicine
Tabor, Lila, Associate Professor Emeritus, Psychology
Thomforde, Clifford, Professor Emeritus, Electrical Engineering
Thompson, lowell, Professor Emeritus, Elementary Education
Thorson, Playford v., Professor Emeritus, History
Tomasek, henry J., Dean Emeritus, Human Resources Development; Professor Emeritus, Political Science
Tweton, D. Jerome, Professor Emeritus, History
UrquAgA, juAna, Associate Professor Emeritus, Spanish
Vennes, John W., Professor Emeritus, Microbiology and Immunology
Waller, James R., Professor Emeritus, Microbiology and Immunology
Warcup, Patricia, Assistant Professor Emeritus, Health, Physical Education and Recreation
Weissur, Wilbur O., Associate Professor Emeritus, Physics
Wessman, Henry C. (Bud), Professor Emeritus, Physical Therapy
Westby, Kenneth L., Assistant Professor Emeritus, Management
Whalen, C. J., Professor Emeritus, Accounting and Business Law
Whitcomb, John l., Associate Professor Emeritus, Mathematics
Wilkins, Robert, Professor Emeritus, History
Wilkins, Wynona, Associate Professor Emeritus, Languages
Willet, Thelma, Associate Professor Emeritus, Music
Winger, Milton E., Professor Emeritus, Mathematics
Winnrich, Lonny B., Professor Emeritus, Computer Science
Wright, Paul, Professor Emeritus, Psychology
Zazula, Frank, Assistant Professor Emeritus, Health, Physical Education and Recreation
## Fields of Study

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*Title change pending approval by the Board of Higher Education.*
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**Specialist Diploma also offered.
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**UNDERGRADUATE**

**GRADUATE**

Masters | Doctorate
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ABOUT THE
University of North Dakota
Grand Forks, North Dakota

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Write: Enrollment Services, P.O. Box 8135
Grand Forks, ND 58202-8135
Telephone: 701-777-4463

Graduate Student Applications
Write: Graduate School, P.O. Box 8178
Grand Forks, ND 58202-8178
Telephone: 701-777-2945

Visit and Tour Arrangements
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